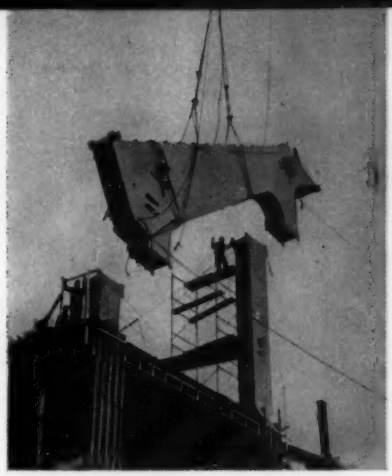
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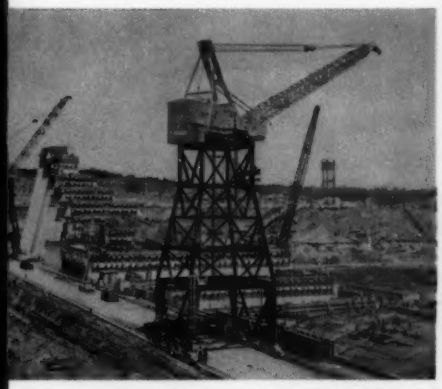
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Construction Methods AND EQUIPMENT

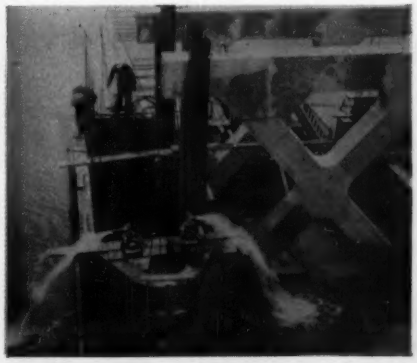
A McGRAW-HILL PUBLICATION



Cranes and Derrick Place Unique Steel Frames . . . 90



Similar Dam Projects Prove No Two Jobs Are Alike . . . 104



Pile Templets Double As Forms, Forms As Cofferdams . . . 118

In a drydock in California, tunnel tubes weighing 6,000 tons each are cast in pairs. See story on page 96.

COMPLETE CONTENTS, PAGE 4





faster swings...15% higher output with the Magnetorque-equipped 1025A

...$12,000 worth of bonus extras come as standard equipment on this 3½-yd. P&H

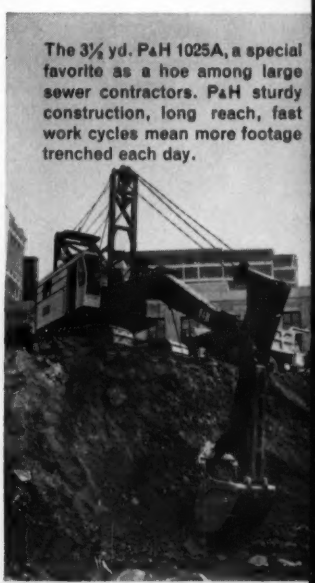
This big P&H 1025A, like all shovels, swings two times for every other work motion it performs. This important work motion is one place you get a big bonus with the 1025A, because it gives you the fastest swing acceleration and deceleration in the 3½ yd. class.

Magnetorque swingers are the reason. With them you get up to 25% faster swings and an average of 15% more production every day. You can't get Magnetorque on any other make. If you could, it would cost you at least $5,000.

Magnetorque is a patented P&H electro-magnetic system—uses magnetic force instead of friction clutches to control swings. No adjustments. No linings to replace. Maintenance so close to zero you can measure it in pennies—for the life of the machine!

It tops a long list of P&H bonus features built into the 1025A. Another important bonus is the heavy duty shovel front, borrowed from famous P&H Mining Shovels. It's the most rugged design on the market, with straddle-type sticks of T-1 steel and integral torsion box. P&H positive chain crowd with fast planetary retract assures you of additional bonus value.

Call your P&H dealer for details on these and other bonus extras that would cost you $12,000 extra on other machines. Or, write Harnischfeger, 4400 West National Avenue, Milwaukee 46, Wisconsin, for descriptive literature.


The 3½ yd. P&H 1025A, a special favorite as a hoe among large sewer contractors. P&H sturdy construction, long reach, fast work cycles mean more footage trenched each day.

HARNISCHFEGER P&H
CONSTRUCTION & MINING DIVISION
Milwaukee 46, Wisconsin



Hi-Torque brakes provide positive control as giant Loader lugs 35 tons

The heavy-duty requirements of this CARY-LIFT Loader, made by Pettibone Mulliken Corporation of Chicago, led to a thorough search for the best brakes available. According to the manufacturer: "Exhaustive tests proved to our entire satisfaction that Hi-Torque brakes were far superior to any other type available to us for our requirements."

The brakes on these Loaders provide gentle yet positive braking under all conditions, including operation with very heavy loads in snow, mud, and other adverse conditions. In addition to superior braking power, the manufacturer reports simplified assembly operations through standardization on Hi-Torques.

Investigate Hi-Torque brakes for maximum controllability and safety on your heavyweight off-road vehicles. Now available on several makes of Loaders, Trucks, Tractors, Scrapers, Mine Vehicles. For information ask your vehicle manufacturer, or write *B.F.Goodrich Aviation Products, a division of The B.F.Goodrich Company, Dept. CM-6, Troy, Ohio.*



Full circle contact with drum is provided by Hi-Torque brakes giving maximum effective braking surface in the same size unit. Hi-Torque stops vehicles twice as fast as conventional brakes.

B.F.Goodrich **Hi-Torque brakes**

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492 Ft. Culvert

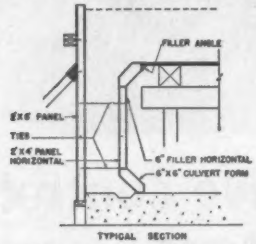


Symons Prefab Forms and Engineering Service

... Reduced by About ½ Material Needed for Job

How to extend an existing culvert 492 feet to allow Mercer Slough to pass under the new Seattle by-pass of U.S. Highway 99. Also, how to finish it before rains swell the slough, or creek, to over-flowing. That was the problem faced by A. R. Anderson Construction Company, Seattle.

Anderson used Symons Culvert Forms with Symons Steel-Ply Panels. Symons engineering and their Seattle man, Hal Caffee, designed a form lay-



TYPICAL SECTION

out, so that inside wall and fillet forms could be stripped out without disturbing the shoring for the slab roof. This not only saved time but reduced by almost one-half, the material needed for the job.

The pay-off! It is estimated that it took under 200 man hours to set up and pour the job and under 60 man hours to strip the forms.

For the complete story on the *Seattle Culvert Job*, send in request on your company letterhead. Symons Steel-Ply Forms rented with purchase option.

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Construction Methods AND EQUIPMENT

JUNE, 1961

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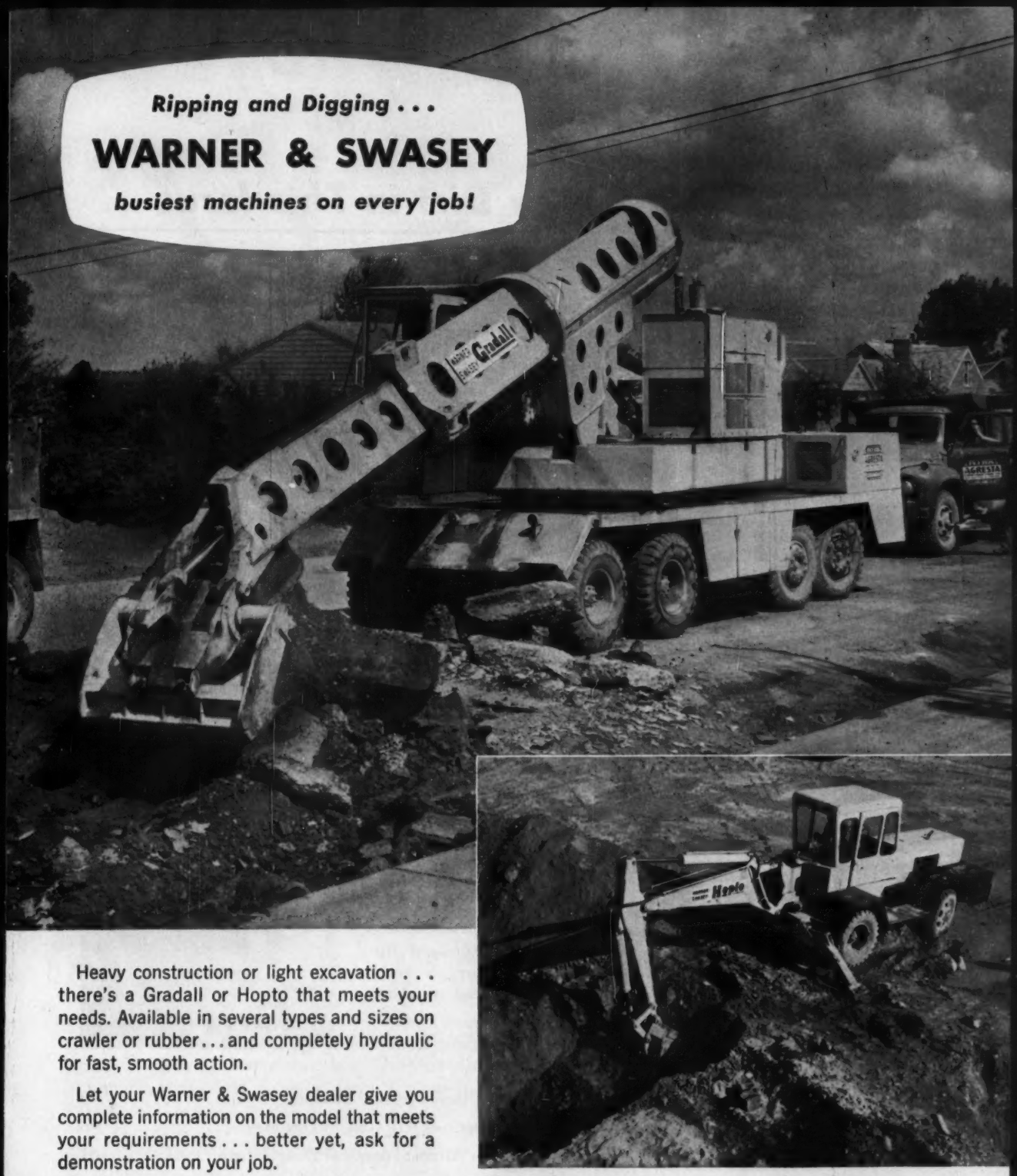
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Circle 3 on Reader Service Card



ON THE COVER

In a drydock built especially for the job, joint-venture contractors Pomeroy-Bates & Rogers-Gerwick are casting twelve 200-ft-long tube sections for a trench-type tunnel under the Alemeda Estuary at Oakland, Calif. By casting the 6,000-ton tubes in tandem pairs, movement of forms, travelers, and gantries is held to a minimum. Two 37-ft-dia tubes are turned out every 400 working hours.

Story starts on p. 96

DEPARTMENTS

Washington News 11
Job Talk 22
Machinery Market Trends 42
Construction Business 45
Picture of the Month 67
Construction News in Pictures .. 70
Construction 'Round the World 76
Editorial 89
Sales and Service 161
Construction Equipment News ..168
New Product Briefs 192
New Publications 199
Advertisers' Literature 204
Maintenance Shop 209
Methods Memo 218
Reader Service Card 219

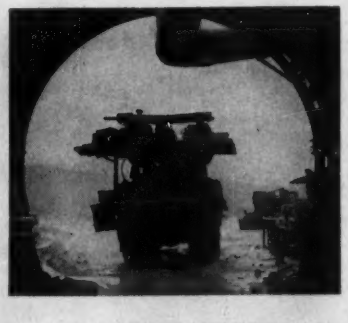
NEXT MONTH — A Special Report

Construction Methods' **13th annual equipment maintenance issue will feature "The Tools of Maintenance." After extensive field investigations, CM&E staffers will report on how contractors are using specialized tools to maintain brakes, tires, crawler running gear and other component systems. Also included will be a rundown on how contractors clean, paint, and handle equipment. A special supplement will up-date CM&E's specification charts on tractors, scrapers, rollers, motor graders, portable compressors and tractor shovels.**

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JUNE, 1961

Pay Dirt in This Issue



Tunnels Are Similar But Equipment Differs . . 94

At California's Trinity Dam project rubber-tired equipment works in one tunnel and rail-mounted rigs in another. Average daily production in the two tunnels is almost the same.



Drilling Subs for Cut-and-Cover Work . . . 102

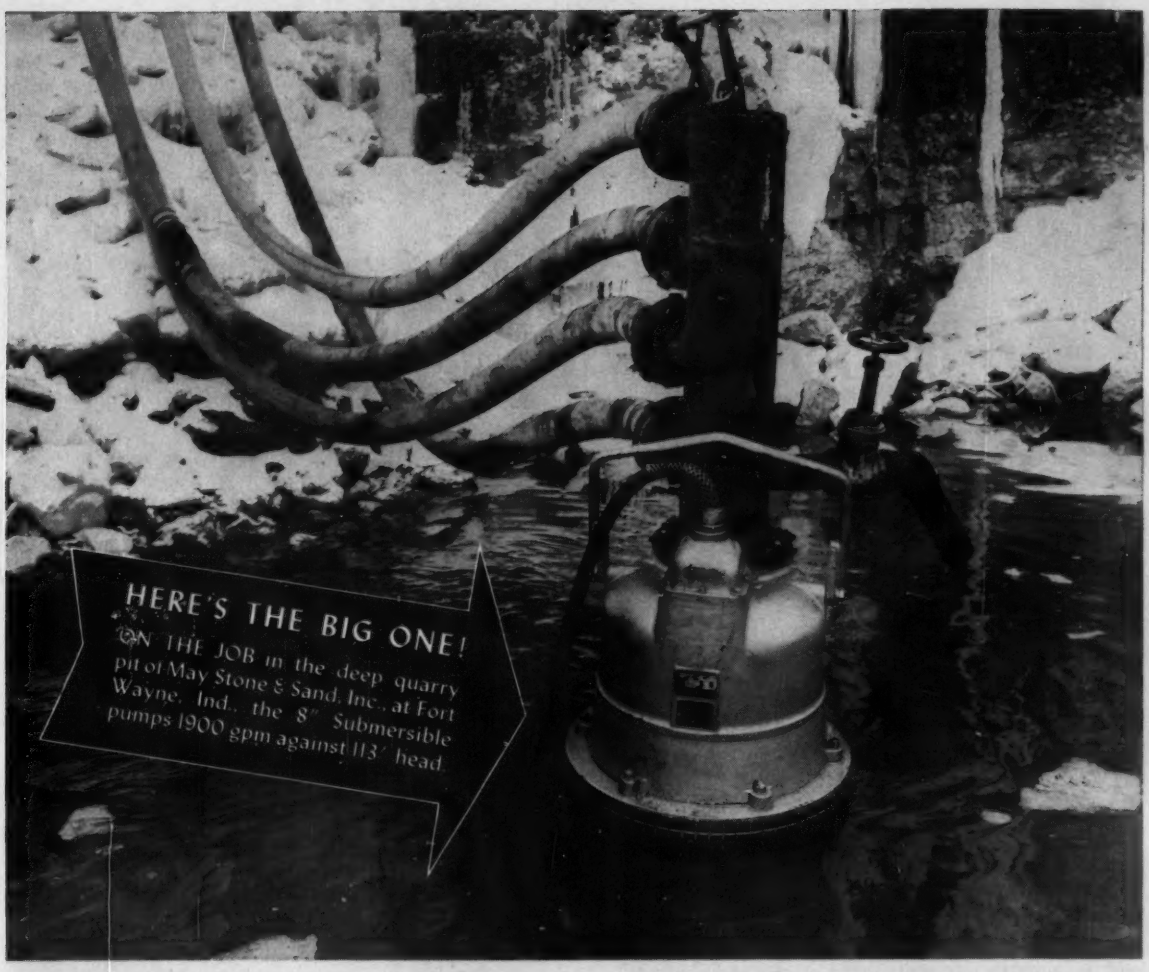
Drilling a horizontal shaft for a water intake and vertical holes for pumping station shafts saves time and money in the construction of a dam and water reservoir in Texas.



Concrete Showcase Shows Off Techniques . . 123

As crews precast big X-panels and beams, the contractor pours-in-place a four-floor base structure and slipforms an elevator core. A tower crane places the precast members.

Cranes Team Up to Place Unusual Stadium Frames..... 90
6,000-Ton Tunnel Sections Are Cast in Drydock..... 96
Techniques Differ on Almost-Identical Dam Jobs.....104
Gradall Is Fitted With Four Pavement Breakers.....114
Templets Double as Forms, Forms as Cofferdams.....118
Homemade Buggies Carry, Place Big Wall Panels.....138
Road Pavers Pour Concrete for Bridge Abutment.....147
New Photoelectric Device Measures Land Areas.....153
Compressor Manufacturers Try Out New Models.....187



Ready now—8" size Gorman-Rupp New Submersible Pumps

See how the discharge is manifolded to four 4" hoses, as this 8" Gorman-Rupp Submersible keeps the quarry going in the dead of winter.

It's an all-weather, all-purpose pump if there ever was one. It's automatic. It's electric. It can handle silty water and solids up to 1" diameter. Has special erosion-resistant materials at wearing points. Requires no attendance; can pump the supply down and run that way for long periods without damage. Leave it submerged indefinitely when continuous service is required—all internal hardware parts in contact with the water are stainless steel. And—the 8" size pumps 1000 gpm at 148' head, 1800 gpm at 118' head, and 2700 gpm at 40' head.

When it's a submersible pump job, here's a unit that pumps *more*—and so dependably! Less first cost. Less maintenance and repair costs. *Gorman-Rupp Submersibles are proving that on jobs from coast to coast.*

The family includes 3", 4", 6" and 8" pumps in motor power specifications to suit *your* requirements. How about calling in your Gorman-Rupp Distributor? Or—call us direct for any information you need.

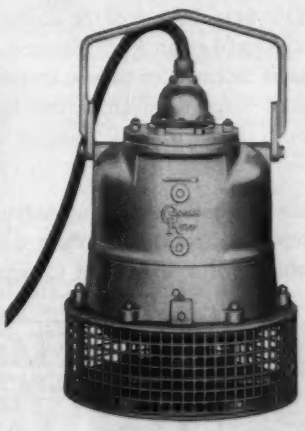
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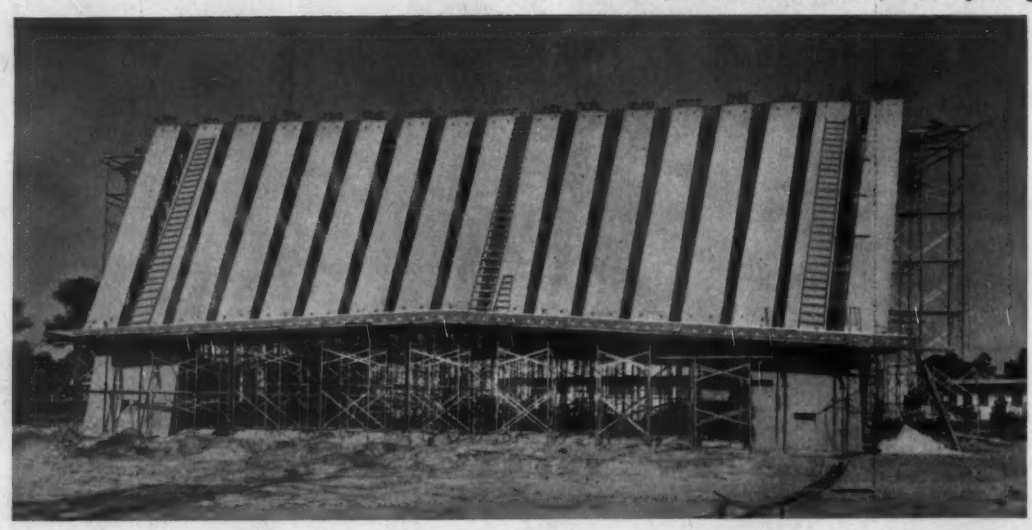
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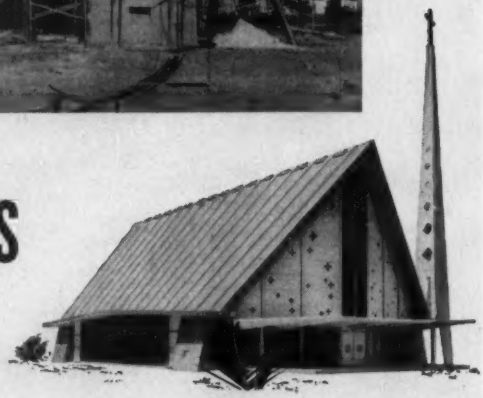


11-3210

Double tee beams are 45′ long, 4′ wide, 15″ deep, and weigh 5 tons. The side beams, which support the double tees, are 95′ long, 9′ wide, 12″ thick, have a 2′ rise at the center, and an exposed aggregate finish.



PRESTRESSED DOUBLE TEES for unique roof structure...



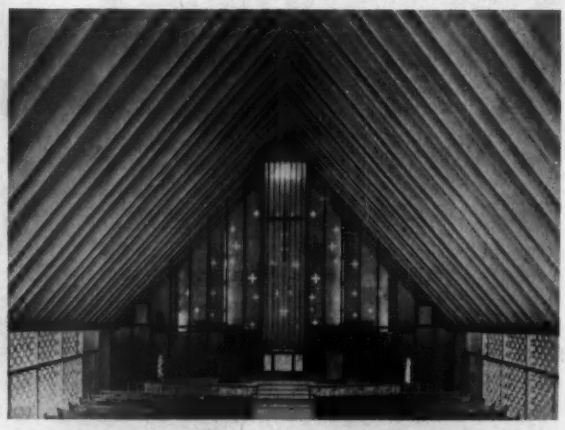
Non-load-bearing precast columns support 3′ x 8′ terrazzo facade panels. Bell tower is 85′ high, 6′ wide at the base, and was precast in 9 sections with Lehigh Early Strength Cement. Abutment structures are 10′4″ x 5′ with 12″ walls, and have an exposed aggregate finish.

• The design of Melrose Park Community Methodist Church, Ft. Lauderdale, Fla., called for a new and imaginative use of standard prestressed concrete double tees. Capped with concrete at the top and secured at the bottom on two huge cast-in-place beams, the 34 double tees make up the "backbone" of the roof structure. The 24″ open spaces between the double tees were filled with a pneumatically placed mortar. The end result is, in effect, a single, giant folded plate supported only by the corner abutments.

In the manufacture of the double tees, R. H. Wright, Inc. used Lehigh Early Strength Cement. Consistent use of this type of cement in their prestressing operations helps them attain maximum production efficiency through early removal of units and quick re-use of forms.

This is typical of the advantages of Lehigh Early Strength Cement in modern concrete construction. Lehigh Portland Cement Company, Allentown, Pa.

LEHIGH CEMENTS

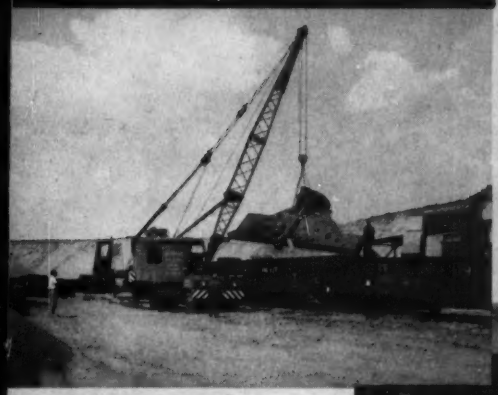


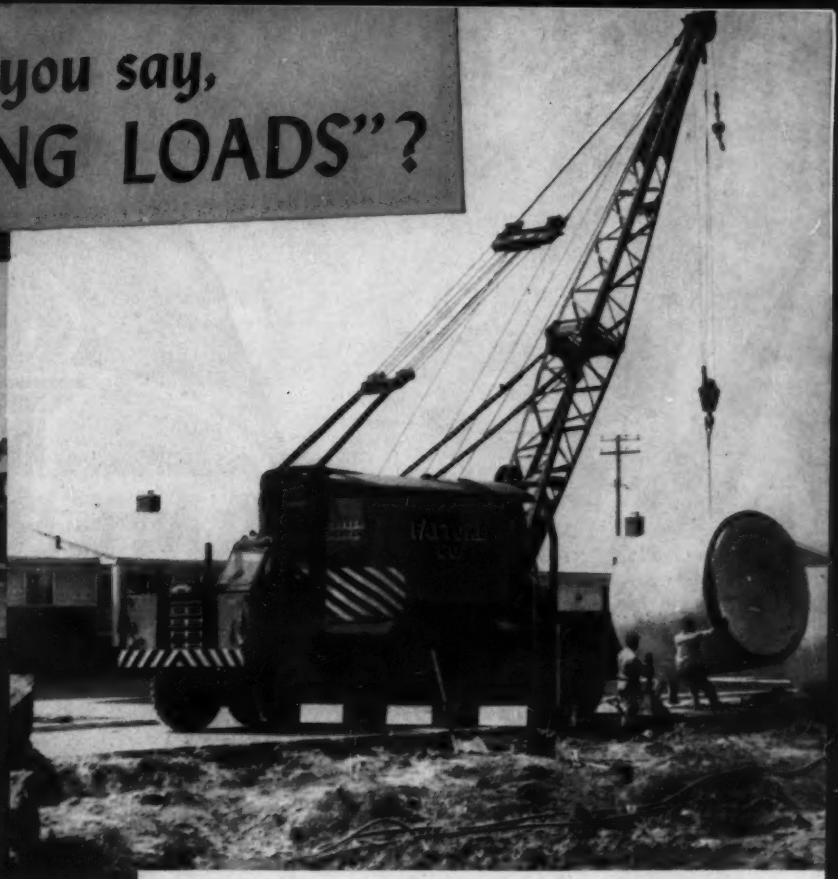
Acoustical plaster was sprayed over exposed double tees. The structure presently seats 510 with future plans calling for the addition of wings to increase seating capacity to over 1,000.

Architect: Robert E. Hansen, A.I.A.
Engineer: Walter Harry Assoc.
Contractor: Casmal Construction Co.
Manufacture and Erection Prestressed/Precast Concrete: R. H. Wright, Inc.
All of Ft. Lauderdale, Florida

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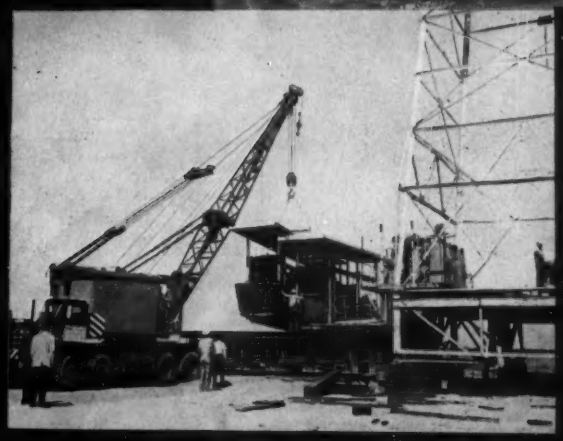
Did you say, "HANDLING LOADS"?











HERE'S a page of Northwest Truck Cranes on heavy duty work. From the 102 in., 14-ton section of pipe above to the 32,000 lb. oil field engine and compound at the bottom of the page—these are typical of the kind of jobs that Northwest Truck Cranes are on.

Northwest Truck Cranes bring you smoothness of performance in handling bulky, heavy loads or spotting high lifts with long booms. The Feather-Touch Clutch Control gives you the true "feel" of the load when easing a giant pipe into the ditch or in spotting highly stressed concrete beams. Uniform Pressure Swing Clutches give you smooth engagement and cool running, free from jerks and grabs that set a boom to jumping.

The Northwest Independent High Speed Boom Hoist operates without sacrificing either main drum and independently of all other operations. It operates under power *both up and down.*

Northwest Truck Cranes bring you Power Load Lowering, Sectional Boom Hoist Rigging and Pendant Lines, Telescopic Boom Struts, Folding Gantries, Adjustable Jibs, Removable Counterweight, 3rd Drums, Open Throat Booms and a host of advanced carrier features combine to get your job done quickly and profitably. Don't buy a Truck Crane without getting the full story.

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Circle 10 on Reader Service Card

Construction News From Washington

Washington, D.C.
June, 1961

Highway Bill Awaits Approval by Senate

New financing for the federal-aid highway program—already approved by the House of Representatives and awaiting expected Senate approval—will provide an added $11.6 billion in federal funds for the Interstate System. This should permit completion of the 41,000-mile network by 1972.

New funds also will allow increased spending on primary, secondary and urban-extension roads. Federal aid for these highways will climb above the present $925-million level at the rate of $25 million in each two-year period after 1964, until the $1-billion level is reached.

The new legislation doesn't increase the present $2.2 billion allotted for the Interstate System in the fiscal year starting July 1. First change will come July 1, 1962, when grants to states will rise to $2.4 billion. After that, they will rise to $3 billion in 1963, and continue at this level till June 30, 1971. A balancing payment of $2.8-billion will be made in the final year.

Airport Bill Faces Battle Over Finances

President Kennedy's aid-to-airports program will run into difficulty in Congress because of its long-term financing plan. Kennedy wants to extend the present program, expiring June 30, for 5 yr and to authorize $375 million of federal matching funds during that time. Annual authorizations would climb from the present $63 million to $75 million.

Kennedy wants Congress to commit itself to the 5-yr program to permit more time for planning, land acquisition, local financing, and preparation of plans and specifications. House members, however, want to keep it on an annual financing basis. They fear a "surrender" of their constitutional control over spending.

The Kennedy bill calls for spending $68 million yearly through June 30, 1966, plus an additional $7 million for the construction of new airports for private and business planes. It would continue the 50% federal contribution toward land purchases and runway construction. No money would be available for terminals.

AFL, CIO Clash Over Factory Construction

Jurisdictional rivalry between craft and industrial unions of the AFL-CIO is picking up in tempo. Last month the U.S. Supreme Court was handed another case involving construction work within industrial plants.

continued on next page

The latest, and possibly most important, case to go before the Supreme Court involves craft unions and the steelworkers at the Bessemer, Ala., plant of U.S. Steel's Tennessee Coal & Iron Div. A decision is expected in the Court's next session.

A U.S. appeals court last month found the steelworkers guilty of an illegal secondary boycott when they prevented outside contractors—and their craft union employees—from performing construction work at the Bessemer plant.

The appeals court backed the right of outside contractors to work within the industrial plant, and the building trades claim this opinion will have substantial bearing on the rights of their 3 million craft union members.

Decision Near on Snake River Dam Projects

Construction of a huge hydro-electric project on the Snake River, between Oregon and Idaho, could hinge on the outcome of an action this month by the Federal Power Commission. June 12 is the date set for final rebuttal arguments over the rival Nez Perce and High Mountain Sheep dam projects, which are backed by the Washington Public Power Supply System and Pacific Northwest Power Co., respectively.

High Mountain Sheep would cost about $200 million. Plans call for a 600-ft concrete arch dam just below the confluence of the Snake and Imnaha Rivers. Nez Perce would cost about $500 million. It also calls for a 600-ft concrete arch dam, but farther downstream, below the confluence of the Snake and Salmon rivers. Only one project will be built.

Interior Secretary Stewart Udall urged the FPC to postpone a final decision until the end of 1964, when his department could complete a crash program study to develop satisfactory facilities to pass migratory salmon through such high dams. The FPC hasn't answered Udall.

House Studies Two Controversial Projects

Hearings on controversial construction projects are running side by side in the House Interior Committee. They are the $170-million Fryingpan-Arkansas diversion project in Colorado, and the $48-million Burns Creek reclamation project in Idaho. This is the third time authorizing legislation has come before the House group. Both projects were killed twice before by the committee.

Fryingpan is rated a fair chance of enactment in this Congress. The Kennedy administration is backing it, and little opposition has developed. The project calls for several reservoirs on the west slope of the Continental Divide and a diversion tunnel through the Divide to the east.

Burns Creek legislation calls for a single, low dam on the Snake River just below the Palisades project in Idaho. Its principal feature would be a power generating plant with 90,000-kw capacity.

The Burns Creek project has about a 50-50 chance of approval by the House committee. If it overcomes this plateau, it probably will go the rest of the way to law. The Senate twice has approved Burns Creek by a large majority.

AMERICAN CABLE





VHS is the hottest rope we've ever used

states Deerfield Rock Company

DEERFIELD BEACH, FLORIDA—Vice President and Manager Grant Trundle has been in the rock mining business over eleven years. During this period he's seen a lot of wire rope come and go. Says Mr. Trundle about his company's experience with VHS hoist and drag rope used on their Manitowoc 3900, "This is the hottest rope we've ever used. It gives us 50% more service than the best of the other brands we've had. Our average service from VHS has been running 230 hours."

What is VHS? What will it do for you?

- It's 15% stronger than Improved Plow steel.
- It's tougher, more resistant to wear.
- It stands up better on scrapers, dozers, shovels and draglines—the rough work.
- It cuts the number of rope replacements.

Your American Cable distributor has Tru-Lay VHS now. He can give you immediate delivery of the size and construction you need.

ACCO

Mail Coupon for FREE Wire Rope Recommendation Booklet

•

American Cable Division
American Chain & Cable Company, Inc.
WILKES-BARRE, PA.



Please send me **FREE** American Cable Wire Rope Recommendation Booklet listing right diameter, construction, lay and grade of wire rope for over 50 general contracting jobs.

TRADE MARK

Name_____

Company_____

Address_____

City_____ Zone____ State_____ CM

Circle 13 on Reader Service Card

New UNIT 1-YD. MACHINE



FAST, POWERFUL, BUILT-TO-LAST
for lowest cost yardage

Here is the **new** MODEL 271-C, Unit's answer to your need for a 1-yd. machine that will do a better job of moving dirt, **yet be economical to own and maintain.** This new addition to the UNIT line retains many of the time-proved features that have won other UNITS world-wide fame for complete reliability and top performance. Add to these dependable features new advances exclusive to the UNIT 271-C, and you'll see why this machine can make more money for you.

The UNIT 271-C features a **new** compact swing circle gear assembly with upper works mounted on a large diameter, double live ring of steel balls running in hardened races. On the job, this means a friction-free, fast swing. With center pin mounting, hook and turntable rollers, and roller path eliminated, there's little lubrication required . . . practically no day-to-day maintenance.

The **new** 271-C also features a unique system that keeps hard working swingers extra cool, extending their life. Swingers run in a bath of oil which is kept cool by a set of copper coils connected directly to the radiator cooling system. Thermostatic control holds temperature below the point where clutch lining life is normally affected by heat.

There is a lot more to tell about these and other UNIT advantages on this, the newest entry into the 1-yd. field. Let your local Unit distributor give you the complete 271-C story.

UNIT

UNIT CRANE & SHOVEL CORP.
6305 W. Burnham Street
Milwaukee 19, Wisconsin

The Model 271-C
FEATURING

DOUBLE BALL BEARING SWING CIRCLE
Friction-free swing, higher load capacity, sharply reduced maintenance time.

OIL-COOLED SWING CLUTCHES
Here's the ultimate in dissipation of harmful heat!

EXCLUSIVE ONE-PIECE MAIN MACHINERY CASE
All gears, shafts, and bearings completely enclosed in a constant oil bath.

EXCLUSIVE AUTOMATIC TRACTION BRAKES
Trigger-fast braking provided in either direction of travel **without manual control.**

STRAIGHT-IN-LINE ENGINE MOUNTING
Longer life, better performance, and increased efficiency because all working parts are perfectly aligned . . . power flows directly to main machinery.

NEW FULL VISION CAB
Operator can see in ALL directions at all times. Promotes safety, increases efficiency.

DISC-TYPE CLUTCHES
Provide uniform pressure without grabbing or chattering . . . easily adjusted.

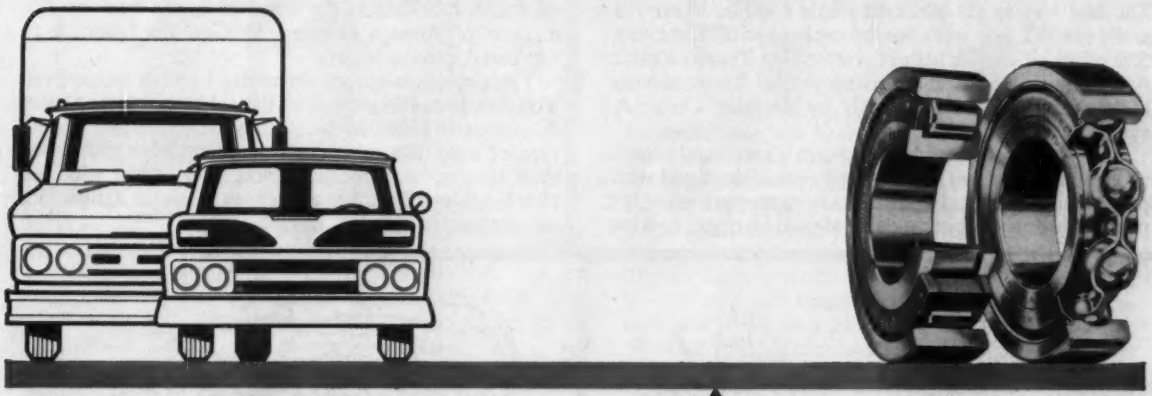
WORM-DRIVEN POWER TAKE-OFF
Provides "one step" speed reduction between power unit and transmission shaft . . . eliminates many wearing parts . . . minimizes friction losses.

FULL CONVERTIBILITY
Shovel, dragline, trenchoe, clamshell, liftcrane, and magnet crane front ends available.

INVOLUTE-SPLINED SHAFTS
Shafts in upper works and crawlers are involute-splined for greatest strength. Wear is reduced . . . replacement is seldom necessary.

Circle 14 on Reader Service Card

YOUR BUSINESS IS IN THE BALANCE . . . and bearing failures can work against you. That's why it's important to specify New Departure ball bearings and Hyatt roller bearings for your fleet. They provide reliability, the kind of worry-free, trouble-free service that helps to cut cents-per-mile costs and assure on-time delivery. N/D and Hyatt are leaders in bearing research, and together are the world's largest manufacturer of bearings for original equipment and replacement use. Their experience has produced high quality, durable bearings which set standards for the industry. These bearings are readily available to you through United Motors Service and its strategically located bearings warehouses throughout the country. So when you replace bearings, be sure you get the best fast. Get New Departure and Hyatt from your United Motors Service supplier.



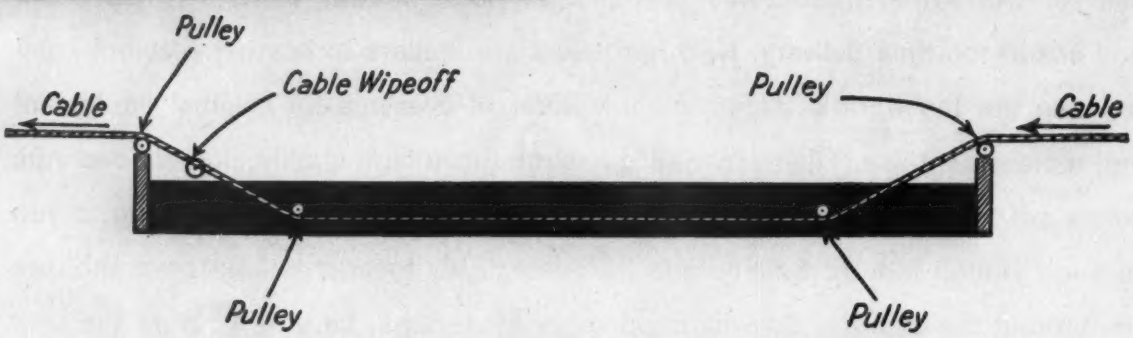
GM U-M-S PARTS SALES
UNITED MOTORS SYSTEM

New Departure and Hyatt bearings are distributed nationally through . . . U-M-S

HYATT NEW DEPARTURE

Circle 15 on Reader Service Card

LUBE LOGIC 5 new ways

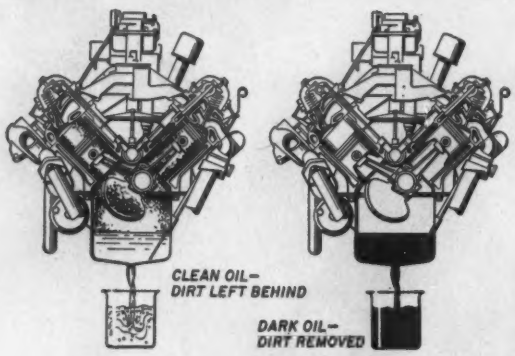


Warm bath restores wire rope

The best way to get lubricant inside a cable, where it's really needed, is to immerse the cable or wire rope every 500 hours or so in a bath of warmed-up Texaco Crater A lubricant. It pays off by giving you far longer service life than you would get simply by applying Crater A externally.

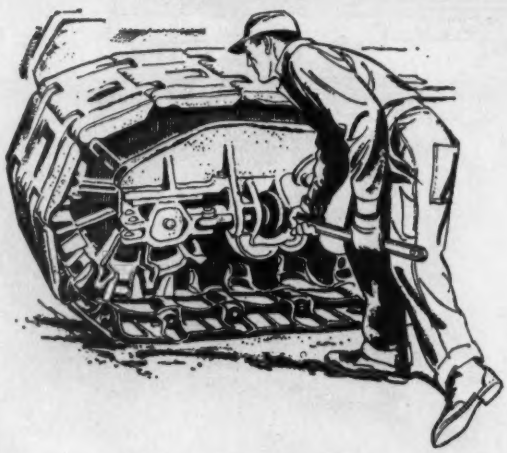
This warm-bath treatment requires a horizontal trough to hold the lubricant. The trough should be fitted with pulleys to keep the cable completely submerged while it's passing through. A burlap collar should be rigged to wipe off excess lubricant as the cable leaves the box. An immersion of about a minute will allow the lubricant to work well into the strands.

This process is *not* an alternative to other lubrication. You should continue to clean the cable and apply Crater A externally every 10 to 100 hours, depending on the type of work the cable is doing. Remember also to be very sparing with lubricants on cables that wind on clutch-equipped drums, and never lubricate cables that are dragged in dirt.



Dark engine oil . . . sign of a hard worker

Here's a motor-oil misconception that's still common enough to need discussion. Some folks think that the better an engine oil is, the more likely it is to come out as clean as it went in. The truth of the matter is just the other way around. A good detergent-dispersant oil holds onto dirt like an old friend. It keeps dust, soot and carbon in suspension, and carries it out of the engine when you drain the oil. Oil that looks clean when you drain it from the crankcase is a sign that these contaminants may still be inside the engine. Moral: oil that darkens in use is really doing its job.



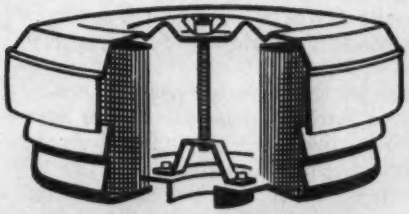
No-sweat way to adjust crawler treads

Crawler treads are easier to adjust if you dab a little Texaco Threadtex on the adjusting screws. The Threadtex stays put through months of service, keeps the screws free-turning and corrosive-proof. Another good use for Threadtex is on track bolts, when you're making up track. A little dab of Threadtex on the bolts will save a lot of time and work in taking down track after it has been in service.

to trim downtime

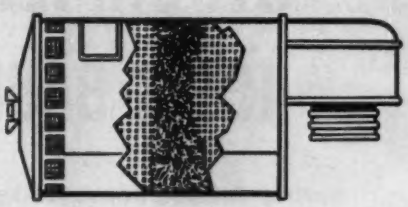
Key points on air filter maintenance

In a day's operation a typical engine inhales several thousand cubic feet of air, and on a construction project all that air is probably loaded with abrasive dirt and dust. Good air-filter maintenance is the only way to make sure your engine gets the air and *not* the dirt. Here are some maintenance tips that will keep your air filter working better through thick and thin.

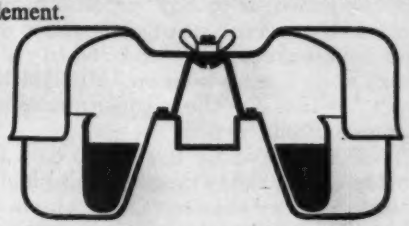


Dry type air cleaners (the ones with the fluted paper element) should simply be shaken or tapped lightly to remove dirt, and reinstalled. Never clean dry-type elements with kerosine or diesel fuel.

Additional precautions: empty centrifugal precleaners when the glass container is half full; don't remove the oil cup when the engine is running.

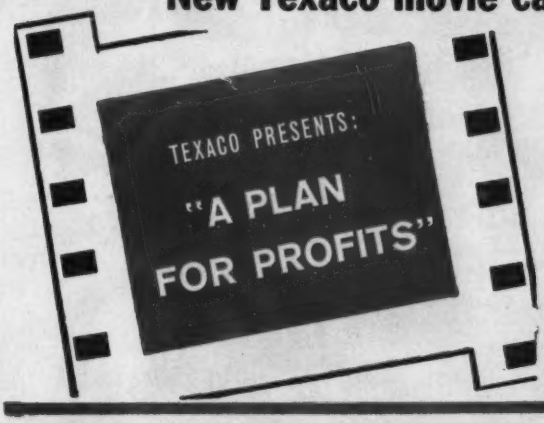


If your filter is the wire gauze type, and you want to re-use the element, wash the gauze in kerosine or diesel fuel, shake it dry *(don't* blow it with compressed air) and re-oil it with SAE 40 or SAE 50 oil to coat the element.



Oil-bath type air filters won't function properly if there's more than a half inch of sediment at the bottom of the oil reservoir. Check the sediment level by sticking a screw-driver down into the oil, and if you're anywhere near the half-inch level the bowl should be cleaned out and refilled. Also, inspect the filter every 5 to 50 hours to make sure the oil itself is at the right level. Every 500 hours the whole cleaner should be dismantled and cleaned, and refilled with new engine oil of the same grade used in the crankcase.

New Texaco movie can help boost your profits



This factual, down-to-earth presentation shows you how 1% of your total budget (the amount usually spent on lubricants) can minimize a major cause of equipment downtime.

SEE: How the biggest engineering job ever undertaken was 90% lubricated with only *four* different products.

SEE: How one contractor lubricated 21 different types of equipment with only seven products.

SEE: "A Plan for Profits"—Texaco's newest sound and color movie.

FOR AN EARLY SHOWING contact your Texaco Contractor Representative *now.*

TEXACO LUBRICATION ENGINEERS

Every month or so we'll bring you a batch of "sleepers"—little angles, so easy to overlook, where big savings in time and money can be made. But month in, month out, your local Texaco Man is your best source of money-saving lubrication ideas. Don't forget that "Lubrication is a major factor in cost control." Texaco Inc., 135 East 42nd Street, New York 17, N. Y.

TUNE IN: TEXACO HUNTLEY-BRINKLEY REPORT, MON. THROUGH FRI.—NBC-TV

TEXACO

Throughout the United States
Canada • Latin America • West Africa

PORTABLE CONVEYOR, CAR UNLOADER STOCKPILE AT 210 TPH FOR ICBM BASE CONSTRUCTION

Barber-Greene conveyor system at ready-mix plant increases capacity, virtually eliminates downtime and maintenance costs for contractor

"Our Barber-Greenes have boosted plant capacity, permitted us to buy material in more economical 10-car lots, virtually eliminated downtime and maintenance costs, and helped us to meet tough specs during work on an ICBM base contract," reports Jim Olsen, superintendent of Cass Concrete Products Co.

Sand and gravel for this 16,000 cu. yd. project are brought by rail to the ready-mix plant, located about mid-way between Omaha and Lincoln, Nebr. The big 70-ton hopper cars are unloaded by a Barber-Greene Model 358 Unloader in about 40 minutes each, including time to position car, attach shaker, and open hopper door. Stockpiling is done by a 75′ Model PA-80 heavy-duty portable conveyor, which permits storage of up to 2,500 tons in a single circular pile.

Material is reclaimed by two Barber-Greene permanent conveyors, a 40′ channel frame unit located in a tunnel under the pile and a 172′ truss-type conveyor that charges the bins in the batch tower. Gates over the tunnel conveyor permit independent reclaiming of sand, gravel, and stone.

You can get this same top performance by calling in your Barber-Greene distributor next time you have an unloading, stockpiling, or screening problem. He sells the only complete line of portable conveyors, portable screening plants, and hopper car unloaders. And each model has a world-wide reputation for efficient, dependable performance.

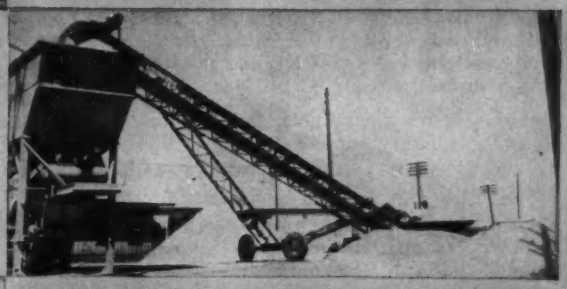


Barber-Greene's complete line gives you more conveyor for your money



PORTABLE SCREENING PLANTS—The all-new Model PS-70 with exclusive Vibra-Spring screen suspension that doubles shock resistance and spring life, delivers capacities to 700 tph. Single deck model tows over the highway without disassembly, needs no overhead or ground screen supports. Double deck PS-70's have quick attach screen mounting. Both are fed by interchangeable hopper or trap.

HEAVY-DUTY PORTABLE CONVEYORS—P-70 Series offers choice of torque-arm V-belt, or lineshaft drive, gasoline or electric power. Lengths range to 60' and capacities to 630 tph. Rugged construction throughout permits these units to take even the toughest punishment in stride. Accessories available for every job requirement.





CHANNEL-FRAME PORTABLES AND UNLOADERS—Channel-frame portable conveyors are available in lengths to 40' for capacities to 200 tph. Lineshaft drives require virtually no maintenance. Model 358 Car Unloader operates either above or below rails, has positive belt drive that prevents slippage, even when started under full load.

Long reach of 75' Model PA-80 Portable Conveyor allows user to build 2,500-ton radial stockpile. Other Barber-Greene portables are available in lengths up to 100' or more.

Note aggregates spewing from Model 358 Car Unloader at 3½ t.p.m. onto rugged 75' PA-80 Portable Conveyor that builds the radial stockpile.



The ultimate in precision-built portable conveyors

Representatives in Principal Cities of the World

Barber-Greene BG

Main Office and Plant AURORA, ILLINOIS, U. S. A.
Other Plants: DeKalb, Milwaukee, Detroit, Canada, England, Brazil, Australia

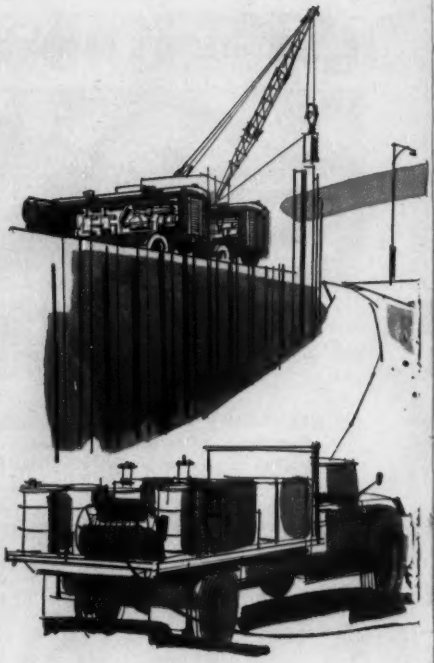
CONVEYORS • LOADERS • DITCHERS • ASPHALT PAVING EQUIPMENT

Circle 19 on Reader Service Card

It's time to get hard-boiled about your air-power costs! Look how you can slash through this whole area of your operations for "man-sized" savings . . . when you standardize with Task Forces of

SCHRAMM

CO-ORDINATED AIR POWER



Gone are the days when contractors can afford to look at the performance and costs of units of air-powered equipment one by one! A new compressor here. An old compressor there. A wagon drill and compressor down the road.

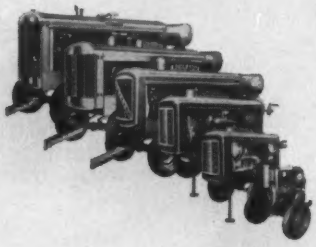
Today, you must take a hard-boiled look at your total air-power picture . . . all the profit leaks and losses, all the waste and inefficiencies . . . that you can plug when you consider your air power as a co-ordinated package.

Reason? All SCHRAMM equipment is designed to fit together, work together . . . give you maximum savings in initial costs, operating costs, maintenance costs. The same basic engines and compressors are used throughout the line for maximum interchangeability of parts between engine and compressor, between products, between sizes. Mass production of these parts lowers costs . . . both initial and maintenance. Plus . . . maintenance "Insurance Kits" contain critical parts for all equipment, save time, costs! Any engine mechanic can service.

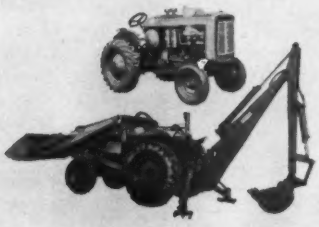
Write today for your Co-ordinated Air Power Booklet. SCHRAMM, Inc., 604 North Garfield Ave., West Chester, Pa.

SCHRAMM

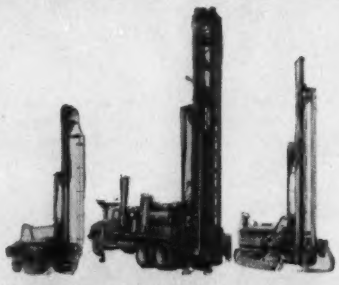
CO-ORDINATED AIR POWER



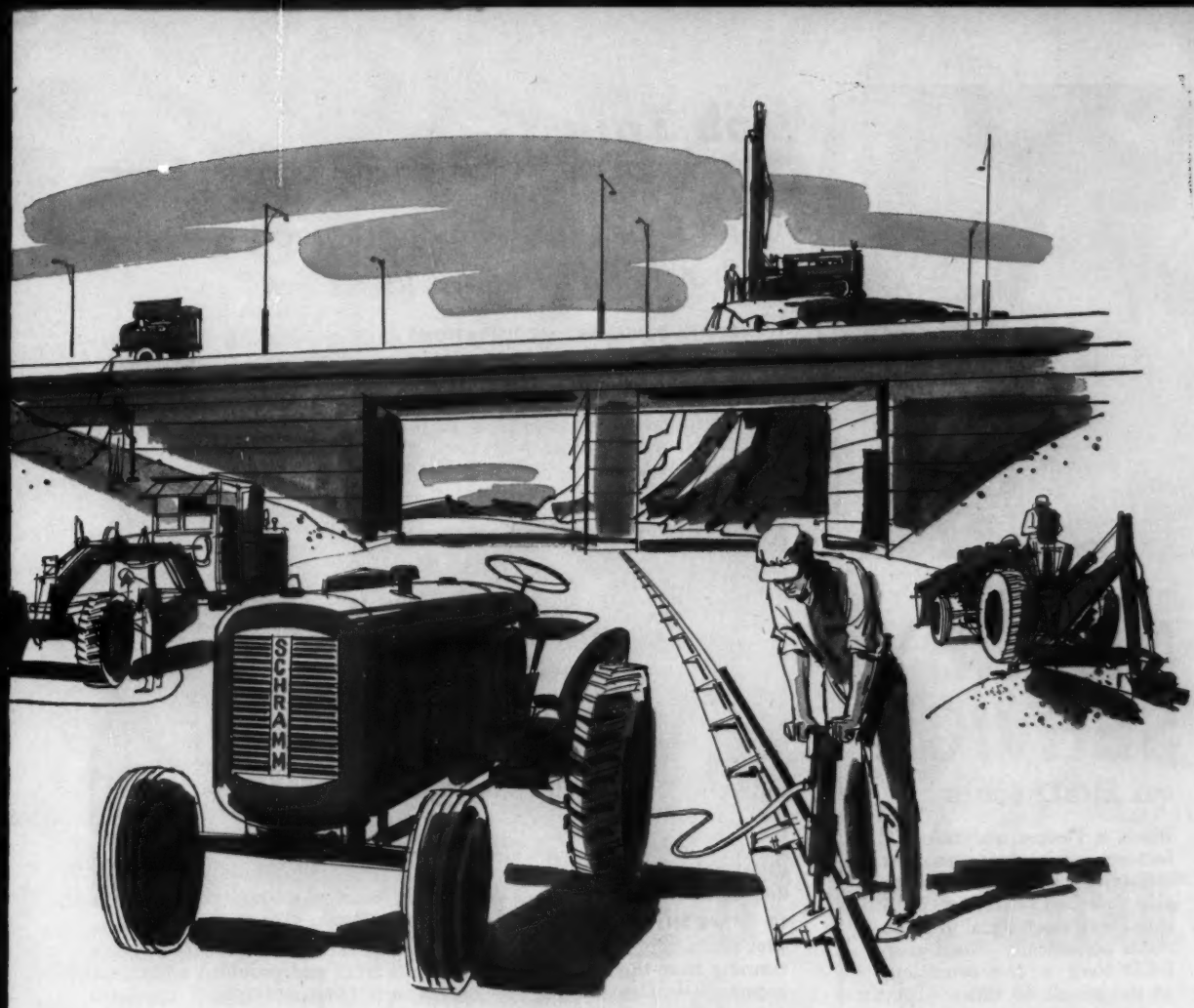
Portable Compressors save you up to 35% initial cost on 125 cfm compressors, comparable savings on every size from 20 cfm to 600. You also save 15 to 50% fuel consumption . . . get more air per unit of fuel. Air is hotter, you get more work per foot of air . . . tools operate at full capacity. Others use 40 gal. of oil in cooling air . . . SCHRAMM uses none!



Pneumatractor **Self-propelled Compressors** cost less than comparable compressors and tractors combined! PNEUMATRACTORS drive along with work. No trucks, crews tied up. With STANDARD or MODEL 250 PNEUMATRACTOR, one man can break out concrete, tamp, drill, any job with air. With HEAVY PNEUMATRACTOR, same man can dig, grade, fill.

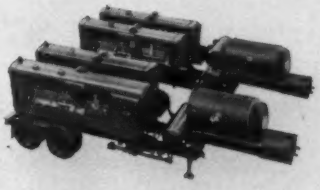


Rotadrill **Rotary Drill Rigs** cost less too. Air compressors are built into all models for fast, efficient chip removal. One man drills, changes steels, drives from hole to hole. Several models available: PNEUMATRACTOR-, truck-, crawler-mounted and do-it-yourself. Plus new Series "H" Hi-Pressure Rotadrills, for extremely hard-rock conditions.





Hi-Pressure Compressors are exclusive with SCHRAMM! Vital for jobs which require higher than normal pressures, such as testing small-diameter pipe lines. Units are dual purpose—can be used at normal pressures for regular work or at high pressures: 60 cfm at 500 psi; 200 cfm at 250 psi; 400 cfm at 250 psi!



Booster Compressors are the ideal package for the high-pressure, high-capacity air jobs such as major pipeline testing. Road-trailer model, shown, produces 1800 cfm at pressures up to 275 psi, or 900 cfm at pressures up to 500 psi. Other models, capacities available. As with all SCHRAMM equipment, buy or rent!



Construction Tools are mass produced to offer low initial cost for rock drills, breakers, clay spades, tampers and others. Combined with SCHRAMM Compressors, you get more air at the tool. More work is done. They provide faster operating speeds, lower up-keep costs, lower air consumption.

From this complete line of Co-ordinated Air-Power equipment, there's an air-power package just suited for you. Investigate today!

Circle 21 *on Reader Service Card*



. . . and for

NEARBY SERVICE

on B&D tools

Black & Decker maintains 50 factory service branches plus authorized repair stations to give your B&D tools the attention every mechanical product needs periodically. Keep your B&D tools in top condition, on the job all the time.

Only factory parts and factory-approved methods are used. Fast service and reasonable cost, always.



SWIFTY SERVICE says be sure to ask about:

FREE TOOL INSPECTION no cost, no obligation.

STANDARD B&D GUARANTEE after completion of all recommended repair work.

You'll find the location of the nearest B&D repair facility in the Yellow Pages under "Tools-Electric," or write for address to: THE BLACK & DECKER MFG. Co., Dept. 2206-S, Towson 4, Md.

50th YEAR

Black & Decker

Quality Electric Tools

Circle 22 on Reader Service Card

Job Talk...

Contractor's Ditch-Paving Spread Built Around Workers' Ideas

HOMEMADE EQUIPMENT MODIFICATIONS enabled Knoxville Construction Co. to pave 6.6 mi of ditches on Tennessee's Interstate 40 at a production-line clip. After experimenting with ideas suggested by its employees, Knoxville came up with half-a-dozen innovations that resulted in an equipment spread capable of placing 550 tons of asphalt a day. The contractor put down 6,631 tons of binder in one 4-in. lift to pave side and median ditches in Tennessee's Cumberland Mountain region.



TO SHAPE THE SIDE V-DITCHES, Knoxville bolted a job-made metal templet to the moldboard of a Caterpillar No. 12E motor grader. A cable running from the templet to the grader's front end provided additional support. Besides shaping the 6-ft-wide ditches, the grader spread a 1-in. stone insulation course.



AFTER THE GRADER shaped the side ditches and spread the insulation course another Knoxville-designed device took over. This one was a 6-ft-wide roller that compacted the stone layer. The 1,200-lb roller was attached by a yoke to a 6-in. I-beam. The I-beam was bolted to the bottom of a Cat D-4 Hilift bucket. The contractor installed an adjustable bracket between the 8-ft-long I-beam and the yoke to stabilize the roller and distribute its weight on the beam. A 55-gal oil drum rides in the Cat's bucket. Knoxville provided a sprinkling system by running a hose from the drum along the I-beam to the roller yoke. The roller was later used to compact the 4-in. asphalt lift that the contractor put down in the next operation.

continued on page 26

Circle 23 on Reader Service Card →



There's NINE in the LINE!

New B&D Heavy-Duty Industrial Vacuum Cleaner Line is longer, offers more power for all-purpose pick-up!

Dirt, wet or dry. Clean it up faster in the factory, furnace room or boardroom . . . with Black & Decker's new line of nine heavy-duty vacuum cleaners. They have pick-up power to spare, mobility to go anywhere. Greater choice of capacities, too . . . ranging from ¼ bushel to 40 gallons.

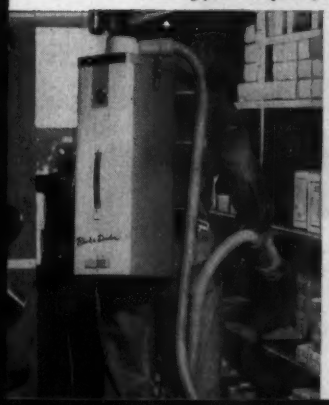
Redesigned tank inlets for increased intake, convenient wet-disposal outlets (on all new stainless models), modern attachments . . . all this you'll find in B&D's new line of nine at your B&D distributor. For further information on how B&D Vacuum Cleaners can help *you* keep clean, send for your copy of "The Inside Story on a Dirty Business." *For sales or service, look in the Yellow Pages of the telephone book under . . .*

TOOLS ELECTRIC

Black & Decker®

CUTS MAN-HOURS TO MINUTES

Up or down, the versatile No. 25 is a heavy-duty lightweight that makes light work of every cleaning job . . . quietly.



Scoop up metal chips, clean up wet, slippery floors with B&D's new stainless No. 65. Low tank outlet for easy wet-disposal.



THE BLACK & DECKER MFG. CO. Dept. 2206
Towson 4, Md. (In Canada: Brockville, Ont.)

☐ Please arrange a demonstration of the B&D Vacuum Cleaner line

☐ Please send free copy of "The Inside Story on a Dirty Business"

Name..... Title.....

Company.....

Address.....

City..... Zone..... State.....

☐ Drills ☐ Grinders ☐ Scruguns® ☐ Hammers

Where you need top truck performance

MACK SHOULDERS

We built it and we stand behind it 100% — Who else can say the same?



MADE BY MACK • • •

THE RESPONSIBILITY

Mack can provide you with top truck performance—performance unmatched by any other truck—because what goes into a Mack is *made by Mack* . . . has the full backing of Mack. Engines, clutches, transmissions, axles, drives and all other major components are made by Mack for Mack trucks alone . . . made to the highest standards of the industry to work together with maximum efficiency.

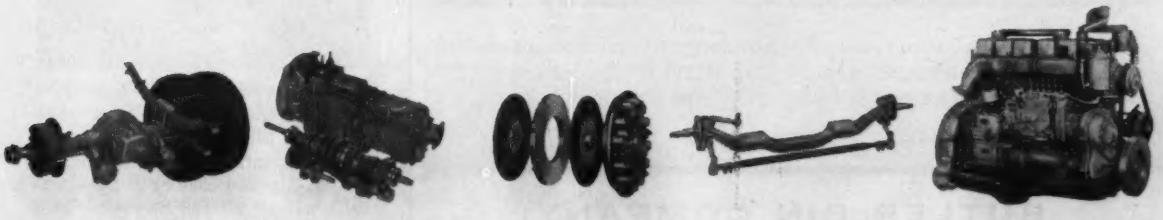
The perfect integration of components achieved by Mack results from the exclusive concept called Balanced Design. It is the basic reason why Mack—alone among truck manufacturers—does not have to split responsibility for its truck performance with outside suppliers of major components.

This is Mack's way of making sure you always get unqualified satisfaction . . . of being sure that every Mack on your job gives the best possible truck performance and maintains the longest prime of life.

So, whether you're hauling freight . . . building an expressway or moving rock . . . delivering furniture, fuel oil or ready-mix concrete . . . if it's the kind of work that means handling big loads at a profit—it's the kind of work for Macks.

Mack trucks on your jobs will give you the advantage of lowest cost of operation plus undivided responsibility for full satisfaction. Your nearest Mack branch or distributor will be glad to suggest the exact model to handle your jobs with utmost dependability and efficiency. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario.

IT'S PART OF THE LANGUAGE... BUILT LIKE A  ***Mack***



MADE BY MACK • • • MADE BY MACK • • • MADE BY MACK • • • MADE BY MACK • • • MADE BY MACK

Circle 25 on Reader Service Card



...BUT *we do design and build Equipment YOU require*

There are several methods and techniques of batching, mixing and transporting concrete for highway, airport or structural construction. Which procedure is best, cost-wise and profit-wise depends upon many, many considerations.

Quite possibly the re-awakened interest in pouring ready mixed from high production, highly portable plants, central or transit mixing plant, directly to the paving forms may be most efficient for certain jobs.

Again, perhaps the work can be most efficiently handled by a plant batching to a paver or pavers.

THE POINT IS THIS: *No one can state categorically that one method suits all jobs. It simply is not true.*

That is why the policy of the BUTLER BIN COMPANY is to place at your command experienced consultation and the finest, most efficient equipment modern engineering, science and technology has developed — for any and every method and every job condition that produces the best concrete — at a better profit for you.

We don't run your business — we simply make it easier for *you* to run it — at peak efficiency.

So — whatever may be your problem or your thoughts are about methods, contact your BUTLER Distributor for an unprejudiced discussion of the equipment you will need.

BUTLER BIN COMPANY

949 Blackstone Ave. • Waukesha, Wisconsin

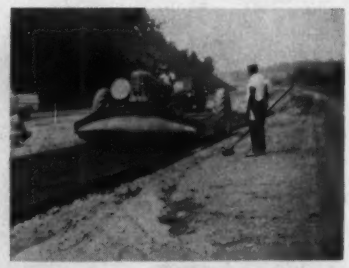
Circle 26 on Reader Service Card



KNOXVILLE MODIFIED a Blaw-Knox 95 widening spreader to pave side ditches. The contractor bolted a templet to the spreader's strike-off plate and installed screws to regulate the asphalt's depth. So that the machine could reach across the 6-ft ditches, the belt conveyor and strike-off assembly were extended 3 ft.



ON THE 10-FT-WIDE median ditches, a Cat 12 grader with a concave templet bolted to its moldboard spread 1-in. of stone. Then, asphalt was hauled by 18-ton trucks that dumped into a four-wheel spreader box with a concave strike-off. A truck pulled the spreader by chains fastened to the dump bed.



A ROLLER, made to fit the ditch contour, was attached to a yoke bolted in place of the pony-wheel of an International I-9 tractor. A special wide axle kept the tractor's wheels off the spread. Water was added to the 2,000-lb roller for additional weight.

Wherever he goes . . . he gets service!



Paul Black is building his 26th lake! What his next job will be or where it will take him, he has no idea. But one thing's for sure—he needs plenty of fast, dependable service for his equipment wherever he is.

His company, the Black Excavating & Contracting Company of Flat River, Mo., often works on projects miles apart. The equipment must be ready to move to different locations at a moment's notice. "And the supplier has got to move with us," states Black. "Cities Service does this . . . and plenty more!"

Black is pleased with all the Cities Service products he uses and is particularly impressed with Cities Service C-500 Oil. "No sludge or varnish problems with C-500," he says. "It's the best lubricating oil I've ever used."

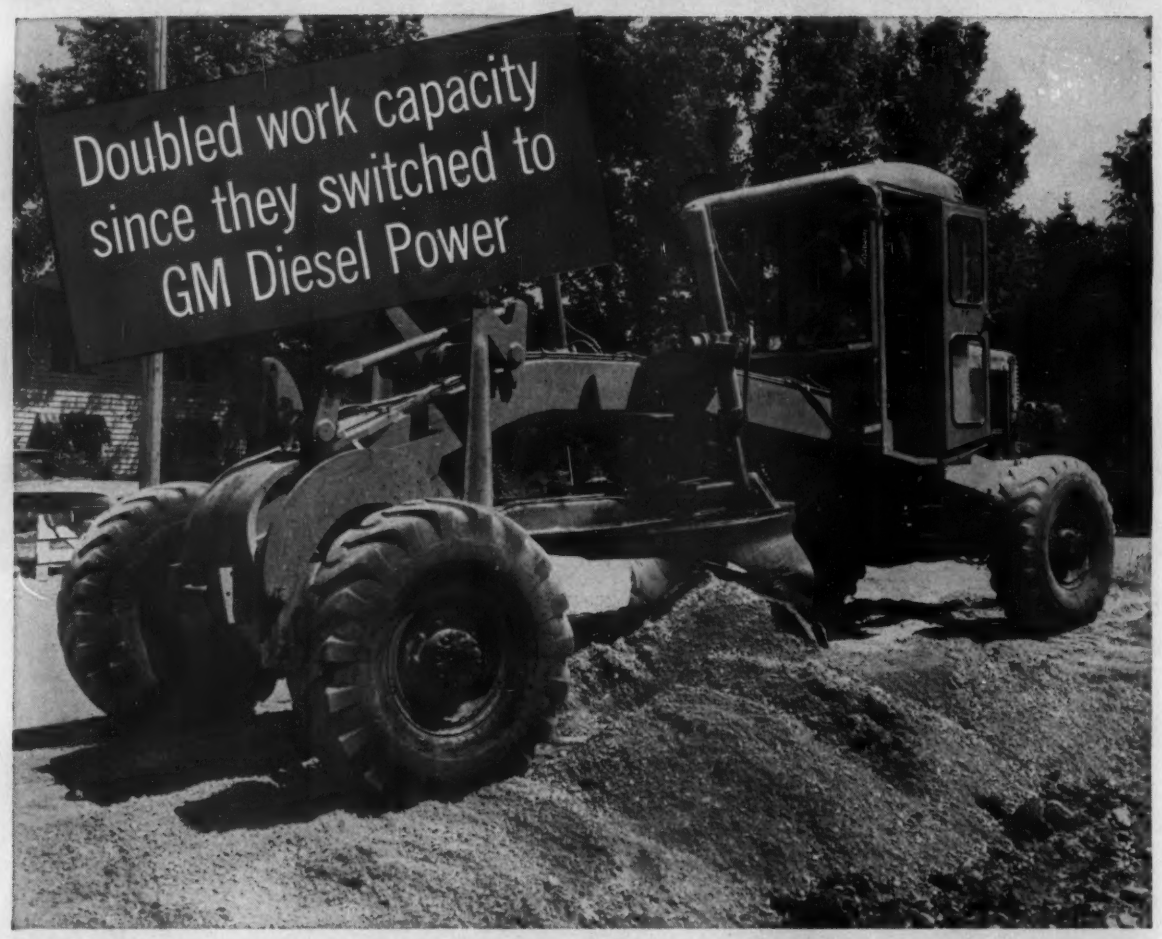
Contractor Black knows he gets the best products, best service from Cities Service. *You* will, too! For complete information, call your nearest Cities Service office or write: Cities Service Oil Company, 60 Wall Street, New York 5, New York.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

Circle 27 on Reader Service Card

GET REAL PRODUCTIVITY



Is there a difference in Diesels?

Ask Wilmer Lean, Patrol Superintendent of Wisconsin's Walworth County Highway Department, that question and you'll get a big "Yes!"

And Mr. Lean has on-the-job proof to back up his opinion.

For he pulled a competitive Diesel out of an Austin-Western 99H grader last year, replaced it with a "4-71" GM Diesel.

Result? "The '4-71' has doubled the work capacity of this unit," Mr. Lean says. Adds, "We now have four graders powered by GM Diesels in use and we're adding another 'Jimmy' by repowering an Oshkosh utility truck."

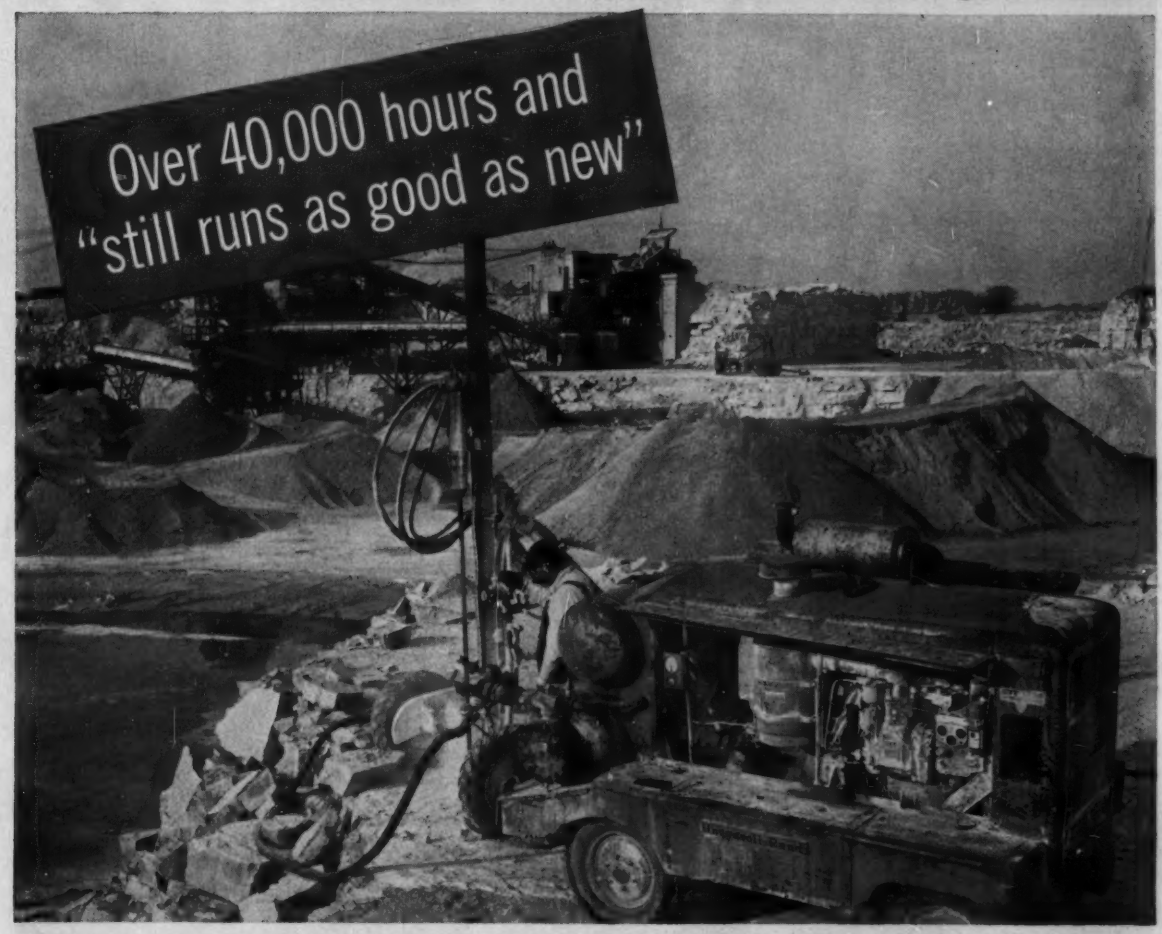
It's easy to see why a GM Diesel-powered grader will 'doze, cast, plane and crown faster than a grader powered by any other Diesel. A "Jimmy" delivers power on every piston downstroke—accelerates faster to pick up the load "right now."

This means you get more work done in less time—or the same amount of work done with fewer pieces of equipment. Either way you save big money in capital investment and operating expenses.

Want to know more? Your GM Diesel Distributor has the answers. He's part of a coast-to-coast network of "engine people" you'll find in the Yellow Pages under "Engines, Diesel."

GM DIESEL ALL-PURPOSE

GET A GM DIESEL ENGINE



One look will tell you that this Ingersoll-Rand 315 Gyro-Flo compressor has had to work for a living.

And worked it has!

For over 9 years it has been on the job day in, day out, supplying air for drills and hammers in the Halquist Lannon Stone Company quarry near Sussex, Wisconsin.

In those nine years this GM Diesel powered unit has racked up over 40,000 hours—*been overhauled only twice* at approximately 18,000-hour intervals.

Mr. A. C. Halquist says, "The GM Diesel 3-71 in this compressor has had only minor adjustments in addition to two overhauls and still runs as good as new. It's one of the best pieces of equipment we ever bought."

If that's the kind of profit-making productivity you want from your equipment, specify a GM Diesel engine when you buy or repower. There's a model of the proper size and output for nearly every type of construction equipment.

For details see your GM Diesel Distributor.



GM DIESEL

DETROIT DIESEL ENGINE DIVISION,
GENERAL MOTORS, DETROIT 28, MICH.

In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario
Parts and Service Worldwide

POWER LINE

Sets the standard of Diesel productivity

Circle 29 on Reader Service Card



St. Mark's Episcopal Church / Frank Mercedes & Son, General Contractor
New Caanan, Conn. / Sherwood, Mills and Smith, Architects



20K heavy duty shoring safely supports huge triangular vault roof

20K FRAMES (each capable of carrying 10,000 lbs. per leg) of "Trouble Saver"® Sectional Steel Shoring are used here to support this complicated 1 ft. to 5 ft.-thick cantilevered concrete roof system of sloping planes and hyperbolic paraboloids. Shoring is quickly erected in free standing, perfectly level and safe units to meet varying heights. Adjustable screw legs are used top and bottom, with U-heads at top to receive stringers. Structure is a 5-bay, 52 ft. by 167 ft. by 50 ft.-high church of modern design.

PS Co. offers complete engineering service through 24 branch offices and warehouses which stock the many types of shoring or scaffolding used when recommending the correct *method* for large jobs or small, complicated or routine. See the Yellow Pages for your nearest source, or write for Shoring Bulletin PSS-51

PSCo SCAFFOLDING & SHORING • SALES • RENTALS

THE PATENT SCAFFOLDING CO., INC.

38-21 12th Street, Dept. C M & E, Long Island City 1, New York
1550 Dayton St., Chicago 22 • 6931 Stanford Ave., Los Angeles 1
Branches in all principal cities
IN CANADA: Canadian PS Co., 329 Dufferin St., Toronto



Circle 31 *on Reader Service Card*



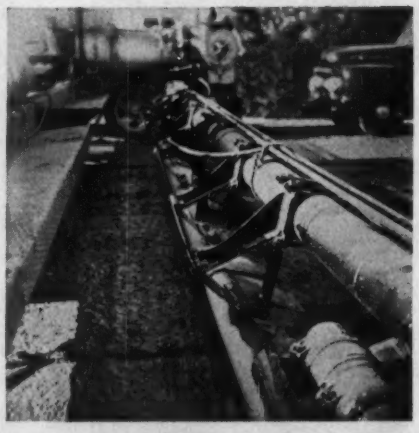
1. JACKSON VIBRATORY COMPACTOR. On any major paving project involving the compaction of granular soils, from sand to large rock, or soil-cement mixes the JACKSON MULTIPLE VIBRATOR COMPACTOR will save its cost in jig time. It's faster in attaining 100% of specified density, more economical to operate and maintain, and has far greater job adaptability than any other machine. Each of the 6 compactor units delivers 4200 3-TON BLOWS PER MINUTE. The 4 outer units can be instantly raised for road travel or greater maneuverability around other equipment. Each compactor unit can be detached, fitted with operating handle and usod as a self-propelling compactor to get into places other equipment can't reach. With side towing device no other equipment can rival it on widening operations.

2. MUNICIPAL PAVING. For jobs of this type a JACKSON VIBRATORY SCREED and Portable Power Plant is a very convenient, productive and inexpensive outfit. Strikes off to any crown, undercuts at curbs and sideforms, works right up to and around all obstructions. Two men easily handle it on all slabs up to 30 ft. wide. Rolls back for second passes on 4 rollers.

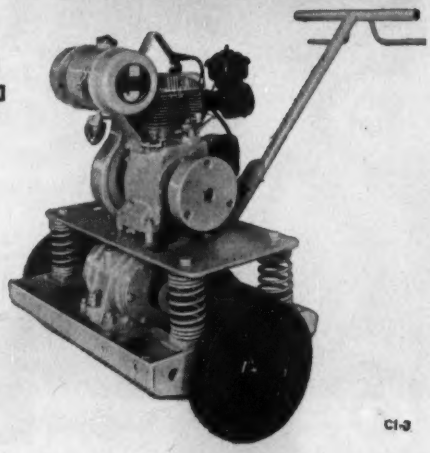
3. JACKSON SURFACE TYPE PAVING TUBE. Equipped with very powerful vibratory motors, tremendous energy is imparted to the freshly spread concrete, puddling thoroughly even the harsh and dry mixes. The tubular bases can be supplied in the exact width to fit the job. Attaches to Spreader or Finisher.

4. JACKSON ENGINE-DRIVEN COMPACTOR. Most powerful and reliable machine of its type on the market. Delivers 4200 3-TON BLOWS per minute. 7 H.P. Wisconsin engine almost completely isolated from vibration. Adjustable vibration-free handle. Wetting device to prevent sticking of asphalt. Instantly attachable wheels for easy movement from location to location (extra). Also available with powerful single phase, 110-120 V. electric motor.

3



4



FOR SALE OR RENT AT YOUR NEARBY JACKSON DISTRIBUTOR
Name and literature on request.

JACKSON VIBRATORS, INC.

LUDINGTON, MICHIGAN

C1-3

Circle 32 on Reader Service Card



Job records prove Firestone's

TIRE TEAM KEEPS LOST YARDAGE DOWN!

1. **Firestone Giant Tires** work harder, last longer because they're built with exclusive Firestone Rubber-X. Longer wearing Rubber-X is more resistant to cuts, and teamed with *bonus-ply* Shock-Fortified cord bodies you get extra toughness and stamina to take tire-killing impacts hour after hour. That's why Firestone SUPER ROCK GRIP (WB) tires keep equipment rolling to keep production up, lost yardage down.

2. **Firestone Giant Tire Service** puts an off-the-highway tire Specialist on your project 24 hours a day to handle all of your tire service needs and do the worrying for you. He'll help make your finish dates good!

Keep penalty day losses off your books—get Firestone's 1-2 Giant Tire Team working for *you!* Get more details from your Firestone Dealer or Store. Or write: Manager, Off-The-Highway Tires, The Firestone Tire & Rubber Company, Akron, Ohio.

Always Specify Firestone Tires When Ordering New Equipment.

Firestone

FIRST IN OFF-THE-HIGHWAY TIRE NEEDS

Copyright 1961, The Firestone Tire & Rubber Company

Circle 33 on Reader Service Card *Circle 34 on Reader Service Card* ➤



Clean burning Gulf® fuels help contractor ahead of schedule...

Contractor M. C. Winters, Johnson City, Texas, has jobs all over the state of Texas. There's a dam at Jasper, a cloverleaf at Beaumont, freeway work in Houston and an excavation and grading contract on the Galveston seawall.

That last job includes the loading, hauling, dumping, spreading and compacting of sand. It's backfill for the new 6900′ extension of the seawall. Although hampered by bad weather, Winters moved 640,000 cubic yards of fill in a 9-week period this past winter. Peak days saw 30,000 yards moved. "Those bottom dumps ran steady for 16 hours a day when the weather was good," reported B. L. Brown, Project Superintendent. "Working so close to the Gulf of Mexico, I thought we might have some problems with fuel system parts rusting. We didn't, as a matter of fact we've had no downtime that can be traced to fuel trouble."

On this project, and others, Winters used clean burning diesel fuel and Good Gulf gasoline to improve engine performance and prolong useful engine life with reduced maintenance. Both of these fuels are exceptionally stable and will not form harmful gum deposits.

To get the most out of your equipment, try clean burning Gulf fuels on your next project. You'll soon



finish seawall job

GULF MAKES THINGS RUN BETTER!

see how Gulf makes things run better! Contact your nearest Gulf office for a quotation. For helpful maintenance tips, and information on Gulf products, write 88-page "Contractor's Guide."

GULF OIL CORPORATION
Dept. DM, Gulf Building
Houston 2, Texas

GULF



A. P. Miles, left, local Gulf distributor; B. L. Brown, center, Project Superintendent; and Jeff Bolling, Gulf Sales Engineer, gather for a job-site conference. Expert on-the-job engineering counsel is an important part of Gulf's service to contractors.

SP 10086

Because this big D-120 PAYDOZER is convertible to a tractor-shovel it

saves $50,000

by giving you two machines for about the price of one

One way to help relieve the squeeze on profits created by increased costs and competition is to use more-modern, more-versatile equipment. For example, this powerful, new Pusher-dozer can be converted to the famous H-120 PAYLOADER Tractor-shovel for an additional investment of about 10% for the conversion package. In turn, the shovel can always be changed back to the 'dozer.

This conversion from one to the other can be made quickly whenever it is called for by job stages, new projects, or seasonal conditions. The resulting benefits are greater equipment flexibility and versatility, while the investment cost is almost halved.



As a pusher-dozer:

Speed and Power: A contractor's superintendent says that this big rubber-tired 'dozer is so fast and mobile that it "replaces two crawler tractors." With its 59,000 lbs. weight, 300 h.p. diesel engine, 12' 4" blade, full-reversing, 4-range full power-shift transmission, and speeds up to 25 m.p.h. in either direction it can cycle fast while bulldozing, move quickly to where needed, and move tremendous yardage per hour or per day. Blade pitch and tilt adjustment, as well as raise and lower, are by precise hydraulic power.

Better Traction and Balance: Approved and exclusive use of dry ballast in all four 29.5 x 25 tires gives better weight distribution and a lower center of gravity – dampens tire bounce and permits better blade control. Torque-proportioning differentials on *both* axles give the most reliable traction.

Matched Torque Converter: A bulldozer and a loader require different torque-converter characteristics. That's why the converter in this 'dozer is designed specifically to develop maximum dozing effort, and a torque-converter change is a part of the 'dozer-to-loader conversion.

As a tractor-shovel:

Big Load Capacity: The H-120 PAYLOADER is available with bucket capacities from 3¾ to 8 cu. yds. (S.A.E. rated) depending on the materials to be handled. Exclusive, patented Drott "4-in-1" bucket can also be supplied.

Advanced Boom Design includes the exclusive use of extra-strong "T-1" steel that saves over a ton of dead weight on the load-carrying end. All boom parts are forward and clear of the operator for greater safety and fullest visibility.

More Dumping Clearance and Reach than comparable units. It loads big trucks and rail cars more evenly and easier – stockpiles higher.

Easy Operation because of power-shift, power-steer and 4-wheel power air brakes. "Operators'-choice" dual brake pedals – exclusive in its class – lets the operator brake with or without the transmission engaged.

An Experienced Hough Distributor is ready to give you all the facts about the H-120 PAYLOADER and the D-120 PAYDOZER and how their convertibility can save you thousands of dollars in equipment costs.

THE FRANK G. HOUGH CO.
706 Sunnyside Ave., Libertyville, Ill.

Send data on the D-120 PAYDOZER and H-120 PAYLOADER conversion.

Name _____
Title _____
Company _____
Street _____
City _____ State _____

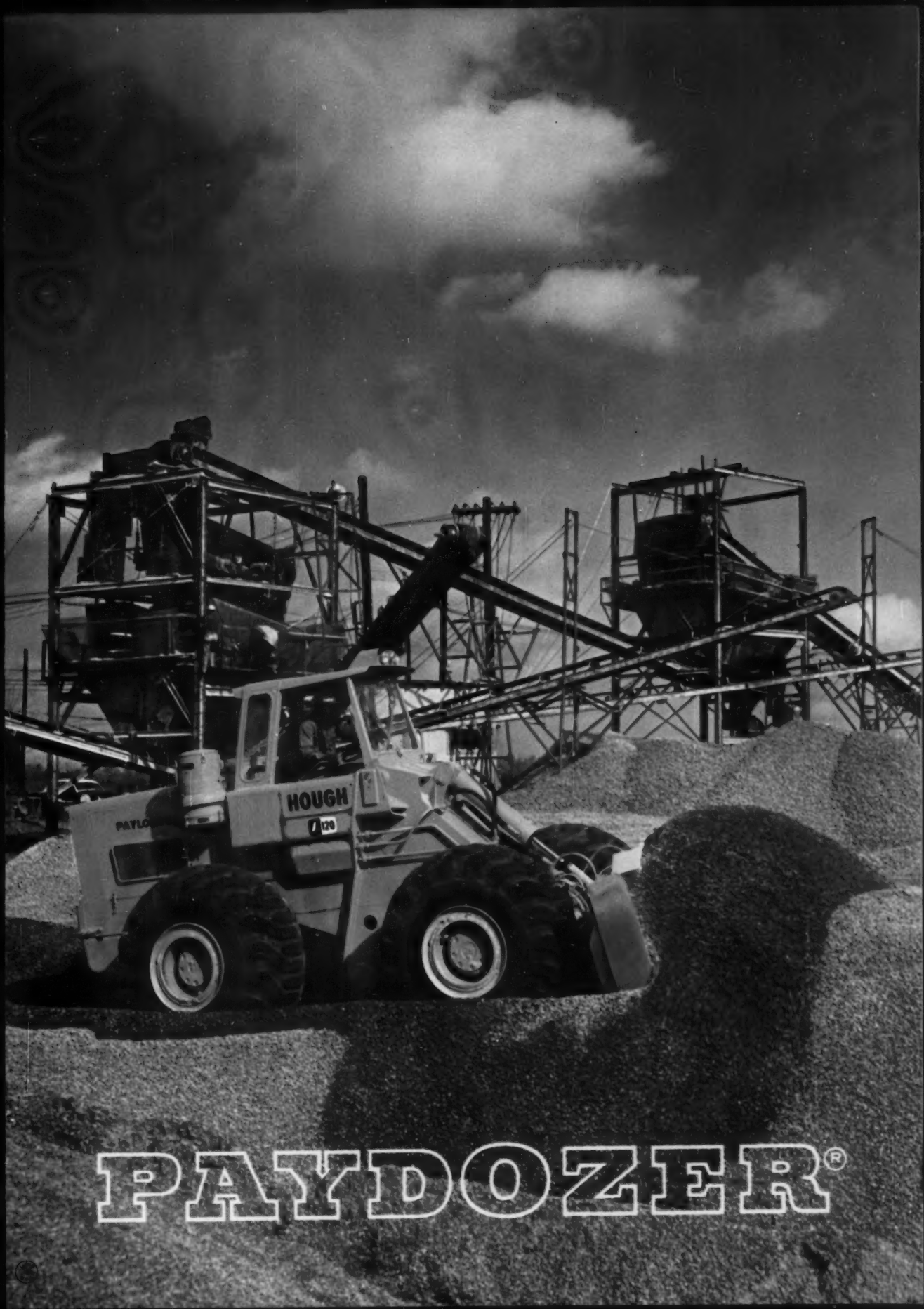
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THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY – INTERNATIONAL HARVESTER COMPANY

HOUGH, PAYLOADER, PAYMOVER, PAYLOGGER, PAYLOMATIC and PAY are registered trademark names of The Frank G. Hough Co. ®

HOUGH

Circle 36 on Reader Service Card


HOUGH
120
PAYDOZER®



"The only downtime we've had in two years is a broken cable"... says Meryl Carr, head man at Acme Construction Co. (Oklahoma City). His statement refers to not one, but *two* 300 Series AMERICAN cranes that he's operated for the past two years. These machines have been used to drive 60-ft. x 16-in. concrete piles . . . place heavy bridge beams . . . and at time of photo set a fast pace on a 190,000-yd. sewer job, using 1-yd. buckets in heavy dirt that required constant de-watering.

downtime?

On another job, one of these AMERICANS set several hundred feet of 36″ cast iron pipe with its 55-ft. boom practically *flat* . . . due to overhead wire obstructions on this particular site.

What do the operators think of these machines? Ask Lee Brewer. He says, "The more I work this machine the more I like it. In fact, I haven't found a thing about it that I don't like. It's a *real* good machine."

Or ask Tom Bateson, operator of the other AMERICAN. He states, "I've operated all kinds and makes of cranes. I broke this machine in and it is as good today as when we bought it. I'll take it over any machine I've ever operated."

Sound like the kind of machine you should own? Call in your AMERICAN distributor and have him tell you more about it. Then you be the judge.

CC-727

AMERICAN

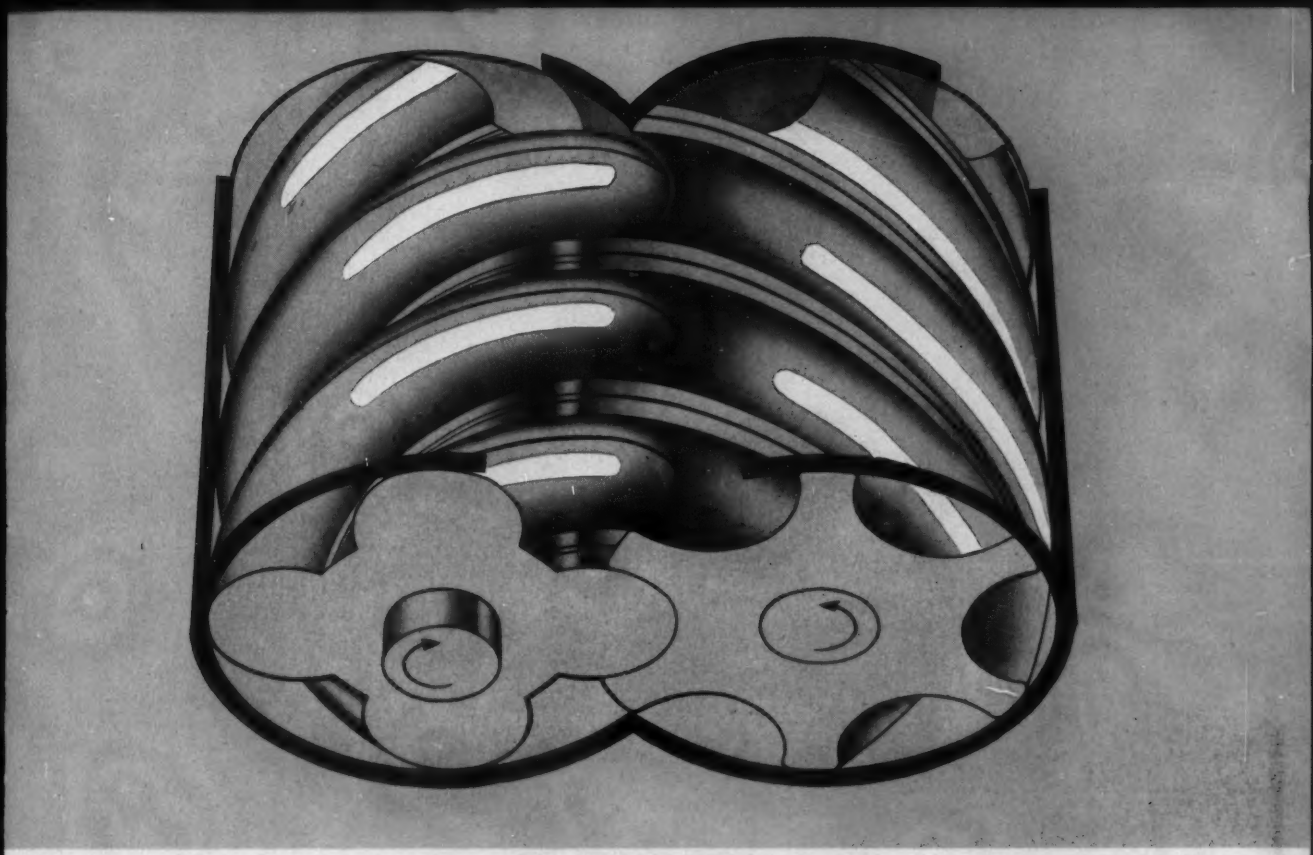
AMERICAN HOIST and DERRICK COMPANY
ST. PAUL 7, MINNESOTA

EXCAVATORS ½ to 4½ yds.
CRANES 12½ to 110 tons

DERRICKS-HOISTS to 800 tons
REVOLVER CRANES to 400 tons

FORGED FITTINGS FOR WIRE ROPE AND CHAIN (Crosby-Laughlin Div.)

Circle 38 on Reader Service Card



New improved method of

CYCLOIDAL COMPRESSION

brings you a 1200-cfm single-engine portable that weighs only 14,000 lb.

Ingersoll-Rand's sensational new 1200-cfm portable air compressor is no bigger than a 900-cfm machine, and weighs 1000 pounds less.

Its amazingly compact size and light weight are due largely to its advanced design single-stage cycloidal compressor with only two moving parts. As shown by the illustration above, the two cycloidal rotors form mating pockets of air that are joined and compressed as the lobes and grooves roll into each other.

Driven by a General Motors 12V71 diesel engine, it gives a new high in capacity per pound of compressor weight.

Ask your Ingersoll-Rand engineer or distributor for complete information.



Ingersoll-Rand®
259A2 11 Broadway, New York 4, N.Y.

THE WORLD'S MOST COMPREHENSIVE COMPRESSOR EXPERIENCE

Circle 39 on Reader Service Card



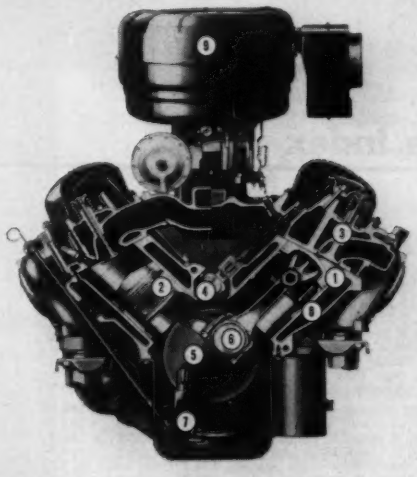
HARD-NOSE UNDER THE HOOD

For moving big loads and saving big money, Chevrolet's Workmaster V8's have know-how aplenty, but knowing when to quit is another story. They've got a stubborn streak a yard wide that keeps them slugging away on the job when lesser engines have given up and gone back to the garage. To put this kind of bullheadedness on a practical, paying basis, only the highest quality design features are good enough, and the Workmasters have 'em all. That's why you'll find them under the hoods of veteran Chevy heavyweights everywhere, under thick layers of grease and grime attesting to thousands and thousands of miles of trouble-free service.

Behind the unique Workmaster brand of performance, durability and economy is a spare-nothing engineering approach which results in a design offering 348 cubic inches of tight-packed, top-level engineering know-how. In either version, the Workmaster or the Workmaster Special, the roster of features offers evidence of truck engineering at its best.

It starts with ultra-uniform, fully machined wedge-type *combustion chambers* ❶ that deliver top smoothness and fuel-stretching efficiency. Aluminum pent-roof *pistons* ❷ are steel-belted at top ring groove, with chrome-faced top and oil rings for long life. Maximum-duty *valving* ❸ includes heat-resistant aluminized inlet and Stellite-faced high-alloy steel exhaust valves, with hardened exhaust valve seat inserts and positive-acting Rotocoils. Valve actuation is by durable roller chain camshaft drive ❹ with self-adjusting hydraulic *valve lifters*. Shock-resistant forged steel *crankshaft* ❺ is induction-hardened at main and crankpin journals for extra-long wear. Premium-quality Moraine 400 main and connecting rod *bearings* ❻ deliver up to seven times conventional bearing life. Full-pressure *lubrication* system is supplied by positive gear-type pump ❼ and includes full-flow oil filter as standard equipment. Pressurized by-pass *cooling system* features full circumference, full length water jackets ❽ to keep temperatures uniform and minimize distortion and wear. And ❾ a 2-pint oil bath *air cleaner* is standard equipment.

These are the features that put Chevrolet Workmaster V8's in the championship class for performance. Why not see your dealer and find out how easy it is to get them working for you! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.



PERFORMANCE DATA	Workmaster Special V8	Workmaster V8
Gross HP @ governed rpm	183 @ 3700	219 @ 3700
Net HP @ governed rpm	160 @ 3700	193 @ 3700
Gross Torque, lb-ft @ rpm	315 @ 2200	335 @ 2800
Net Torque, lb-ft @ rpm	285 @ 1800	302 @ 2600
Displacement, cubic inches	348	348
Carburetor type	2-barrel	4-barrel

MODEL APPLICATIONS

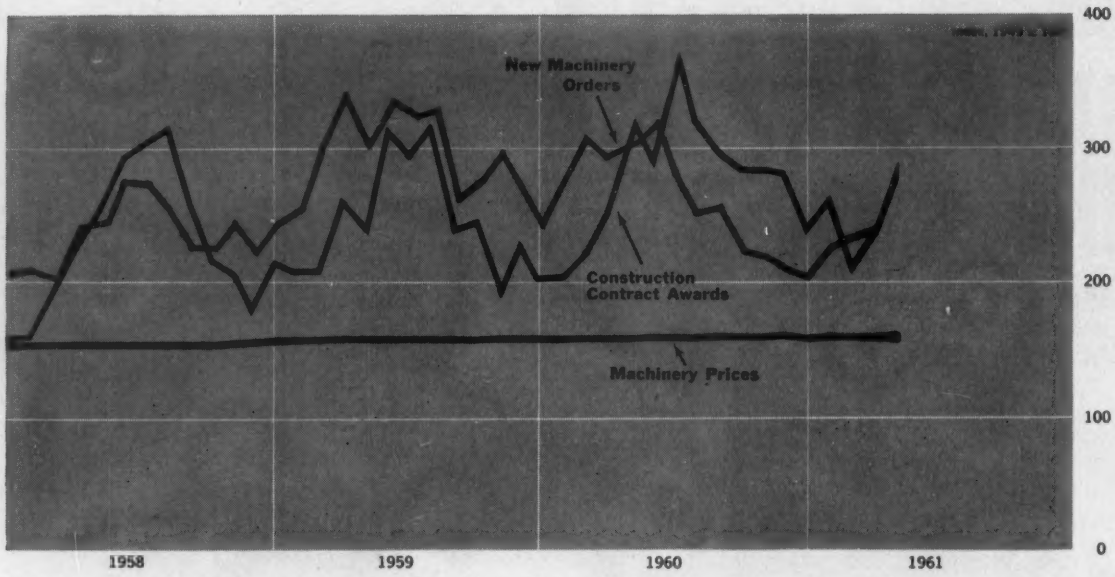
Engine Model	Truck Series	Max. GVW	Max. GCW
Workmaster Special V8	C70, L70, T70	23,000 lb	42,000 lb
Workmaster V8	C80, L80, T80	25,000 lb	51,000 lb
	M70 Tandem	36,000 lb	51,000 lb

1961 CHEVROLET STURDI-BILT TRUCKS

CHEVROLET

Circle 41 on Reader Service Card

Trends in the Machinery Market . . .



Price Index

	APRIL 1961	MONTH AGO	YEAR AGO	% CHANGE 1960-1961
All Types of Equipment	178.2	178.1	174.7	+ 2.0
Cranes; Draglines, Shovels	**173.9**	**173.4**	**172.5**	**+ 0.8**
Shovel, ½ cu yd	173.1	173.1	167.7	+ 3.2
Shovel, ¾ cu yd	178.2	177.7	175.7	+ 1.4
Shovel, 1-1½ cu yd	191.0	189.3	188.6	+ 1.3
Shovel, 2-2½ cu yd	169.1	169.1	166.4	+ 1.6
Shovel, 3-3½ cu yd	159.8	159.8	167.8	— 4.8
Shovel, 6 cu yd	197.9	197.9	195.0	+ 1.5
Crane, truck mounted	165.9	165.9	168.2	— 1.4
Crane, tractor mounted	135.1	135.1	135.1	0
Bucket, clam shell	162.9	162.9	162.9	0
Bucket, dragline	169.3	169.3	169.3	0
Scrapers and Graders	**166.6**	**166.6**	**165.2**	**+ 0.8**
Scraper, 4 wheel, 8-10.5 cu yd	155.0	155.0	155.0	0
Scraper, 4 wheel 12-15 cu yd	156.8	156.8	156.8	0
Scraper, 2 wheel, 15-19.5 cu yd (a)	126.2	126.2	124.9	+ 1.0
Grader, heavy duty	174.1	174.1	173.1	+ 0.6
Grader, light & medium	170.9	170.9	171.1	— 0.1
Tractors (non-farm, incl industrial)	**195.7**	**195.7**	**191.2**	**+ 2.4**
Wheel type, off-highway (a)	129.2	129.2	129.2	0
Crawler type, 50-74 dph	205.3	205.3	195.4	+ 4.9
75-99 dph	204.8	204.8	201.2	+ 1.7
100-154 dph	200.2	200.2	194.2	+ 3.1
155-200 dph	208.6	208.6	203.3	+ 2.6
Machinery, Tractor Mounted	**177.3**	**177.3**	**169.2**	**+ 4.8**
Dozer, cable controlled	164.8	164.8	154.4	+ 6.7
Dozer, hydraulic controlled	201.4	201.4	186.6	+ 7.9
Cable power control unit	152.9	152.9	152.9	0
Loader, tractor shovel	166.5	166.5	162.5	+ 2.4
Specialized Machinery	**158.8**	**158.8**	**157.8**	**+ 0.6**
Ditcher	153.8	153.8	150.2	+ 2.3
Roller, tandem	228.5	228.5	226.4	+ 0.9
Roller, 3 wheel	178.7	178.7	178.7	0
Ripper and rooter	164.5	164.5	156.6	+ 5.0
Dewatering pump, 10 M gph	110.1	110.1	111.5	— 1.3
Dewatering pump, 90 M gph	151.8	151.8	151.5	+ 0.1
Portable Air Compressors	**182.6**	**182.6**	**167.5**	**+ 9.0**
Contractor's Air Tools	**190.6**	**190.6**	**181.6**	**+ 4.9**
Mixers, Pavers, Spreaders	**159.9**	**160.9**	**159.8**	**+ 0.1**
Mixer, portable, 11 cu ft	168.2	168.2	166.8	+ 0.8
Mixer, portable, 16 cu ft	172.9	172.9	172.7	+ 0.1
Mixer, truck, 6 cu yd	131.1	134.4	135.1	— 3.0
Mixer, paving, 34 cu ft	192.9	192.9	196.7	— 1.9
Concrete finisher & spreader	198.4	196.7	201.9	— 1.7
Bituminous distributor	124.5	126.2	126.2	— 1.3
Bituminous spreader	179.4	179.4	170.2	+ 5.4
Bituminous paver	165.9	165.9*	165.6	+ 0.2
Off-Highway Trucks, Wagons (b)	**102.5**	**102.5**	**101.1**	**+ 1.4**
Contractors off-highway truck (b)	102.0	102.0	101.1	+ 0.9
Trailer dump wagon (b)	106.7	106.7	101.4	+ 5.2

• (a) January, 1955 = 100 • (b) January, 1958 = 100 *Revised
BLS Primary Market Price Indexes, U. S. Department of Labor, 1947-49 = 100

Scattered Price Hikes Raise Index to Record

LIST PRICE CHANGES for major types of construction equipment are occuring on a scattered basis this year. The latest Bureau of Labor Statistics index shows a small rise between March 15 and April 15.

But the increase of only 0.1 point set a new high of 178.2, based on average prices during 1947-49 as 100. This was 2% higher than the year-ago index.

In April, increases for ¾, 1 and 1½-yd shovels, and for concrete finishers and spreaders, almost cancelled out price cuts for truck mixers and bituminous distributors.

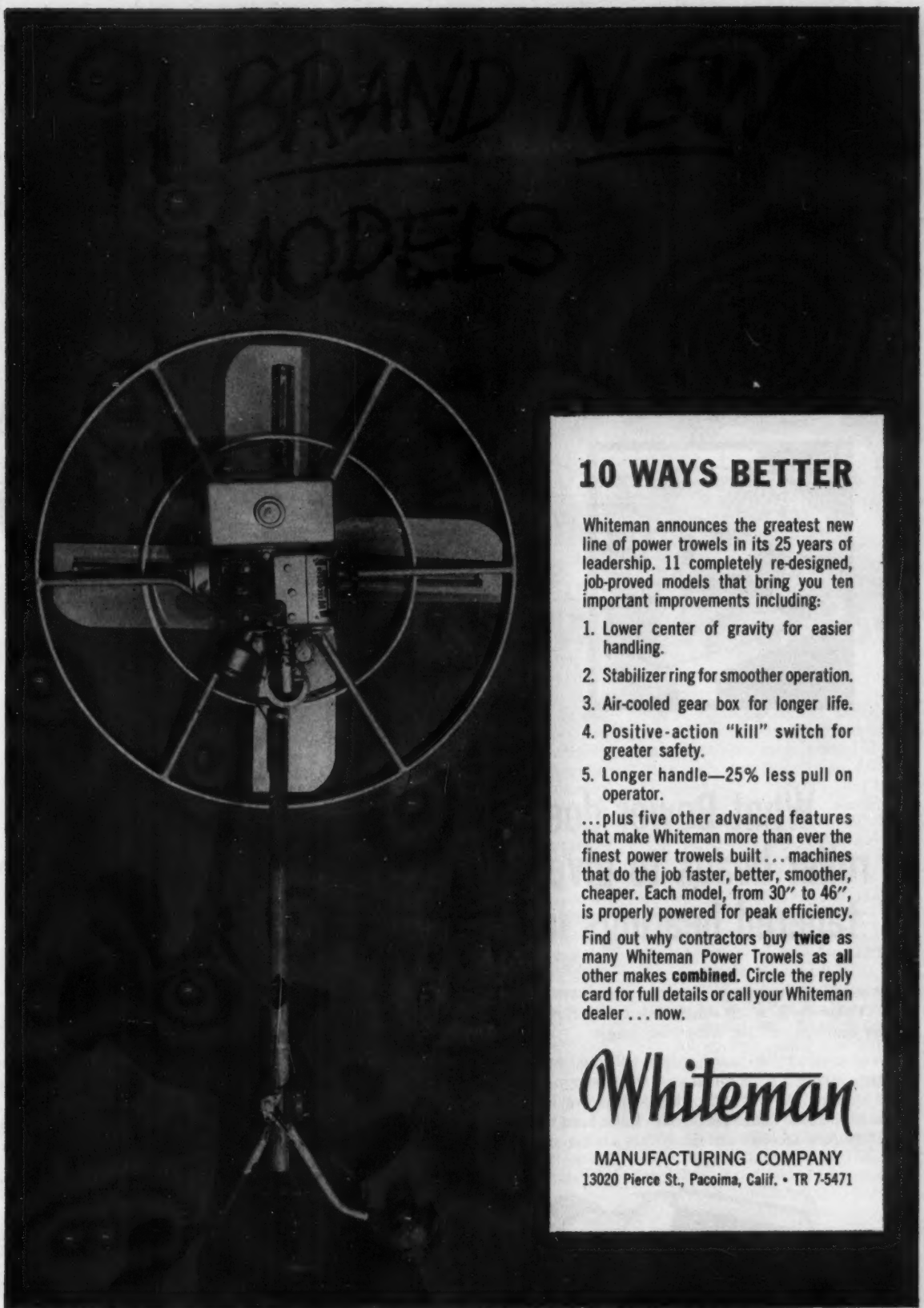
More minus signs are starting to show up in the year-to-year price index comparison (see table). Latest price indexes are below a year ago for power shovels with 3 to 3½-yd dipper capacities, truck mounted cranes, smaller motor graders, dewatering pumps in the 10M gph or lower sizes, truck mixers, paving mixers and bituminous distributors.

Several categories of equipment show no net change for the 12 months ending this April 15, according to BLS' indexes.

Equipment orders received by manufacturers edged up in March but remained below the year-ago level for the 17th consecutive month. The new orders index for construction and mining machinery moved up 2% to 244 in March, based on average monthly dollar volume in 1949 as 100.

This was 17% under March 1960, according to the McGraw-Hill Economics Dept. The first quarter average was down 19% from last year.

The Construction Contract Index rose from 244 in March to 289 in April. But it was 10% below last year and represented the third straight monthly decline.



10 WAYS BETTER

Whiteman announces the greatest new line of power trowels in its 25 years of leadership. 11 completely re-designed, job-proved models that bring you ten important improvements including:

1. Lower center of gravity for easier handling.
2. Stabilizer ring for smoother operation.
3. Air-cooled gear box for longer life.
4. Positive-action "kill" switch for greater safety.
5. Longer handle—25% less pull on operator.

...plus five other advanced features that make Whiteman more than ever the finest power trowels built... machines that do the job faster, better, smoother, cheaper. Each model, from 30″ to 46″, is properly powered for peak efficiency.

Find out why contractors buy **twice** as many Whiteman Power Trowels as **all** other makes **combined.** Circle the reply card for full details or call your Whiteman dealer . . . now.

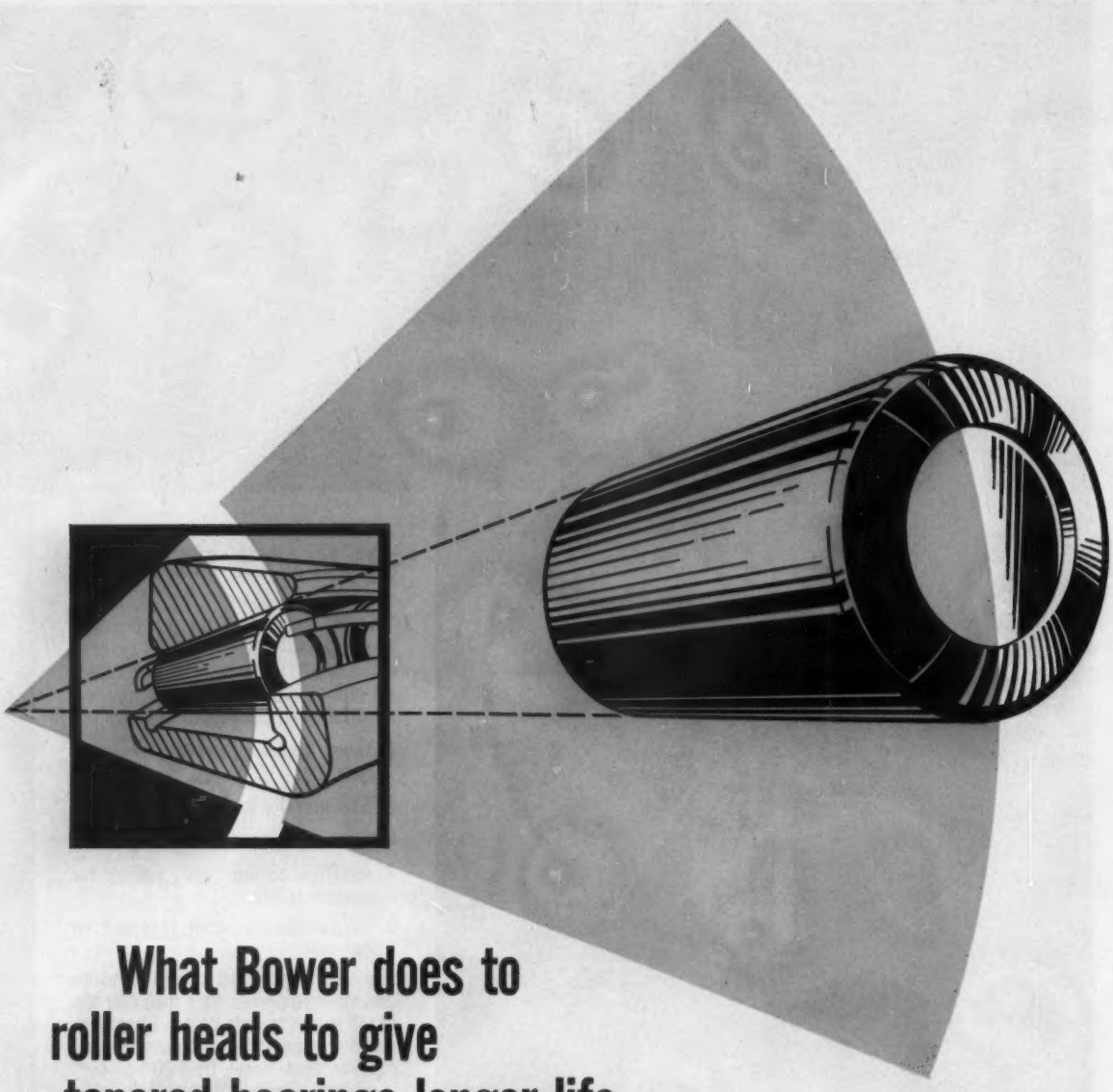
Whiteman

MANUFACTURING COMPANY

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POWER TROWELS • POWER BUGGIES • VIBRATORS • POWER SCREEDS • TRUCK MIXERS

Circle 43 on Reader Service Card



What Bower does to roller heads to give tapered bearings longer life

The spherical head design shown above is part of what we call "Spher-O-Hone". It simply means that Bower tapered roller bearings perform better, last longer.

Bower grinds roller heads with a spherical radius. This assures accurate roller alignment, which eliminates sliding and skewing. An "O" shaped groove is provided at the base of the cone flange for positive roller head lubrication. And the cone raceway and flange face are honed precisely. These further lessen friction, thus reducing wear.

This is typical of the attention paid to details in design and manufacture by Bower engineers. And to you this attention can mean faster schedules, less downtime and greater profit from each job because Bower bearings handle maximum capacity loads and last longer.

When you need tapered or straight roller bearings of any type or size, be sure to specify Bower.

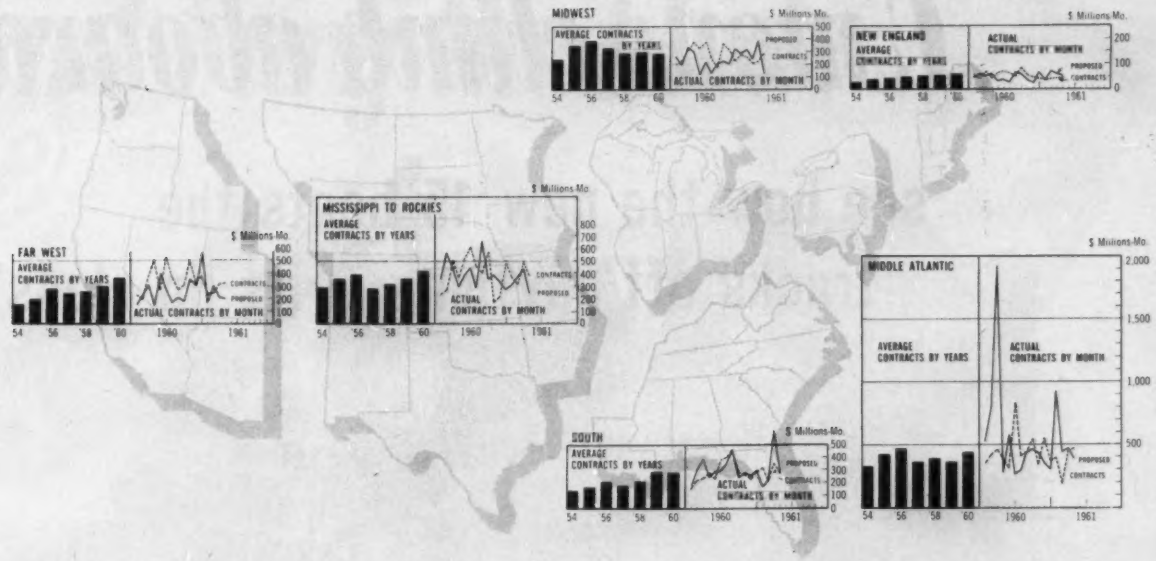


BOWER ROLLER BEARINGS

FEDERAL-MOGUL SERVICE

DIVISION OF FEDERAL-MOGUL-BOWER BEARINGS, INC. • DETROIT 13, MICH.

Circle 44 on Reader Service Card



New Business Runs Ahead of '60

NEW BUSINESS for heavy construction contractors is running ahead of last year, according to *Construction Methods'* figures. The volume of January-to-April contracts is second only to 1956's record.

But the flow of new business lost some momentum after January's 31% jump over the relatively low year-ago volume. While March and April showed seasonal increases, neither month's contract volume rose enough to match the fast pace of last year.

May figures were much better and as we went to press they promised to set the fastest pace to date. The cumulative total for the first 20 weeks of '61 was 1% above last year.

These over-all figures—covering 50 states—probably are too broad to mean much to contractors who operate within only one region of the U.S. Only the Middle Atlantic region is following reasonably close to the over-all U.S. trend. Volume in the Middle Atlantic is a shade higher than last year.

But in other regions, the picture is much different:

- If you're active in heavy construction in the South, or in the area ranging from the Mississippi River westward to the Rocky Mountains, chances are that you booked more contracts in January-April '61 than in the like period of 1960. Awards reported by *Construction Methods* are up 28% in the South and 15% in the Mississippi-to-the Rockies region.
- Contractors operating in New England, the Midwest or Far West more than likely experienced leaner pickings this year than last. Heavy construction contract volume is off 12% in the Midwest, 15% in the Far West, and 17% in New England.

These regional figures and trends (see above) can help the contractor make business decisions. They tell him what the trend of new business was as of a few weeks ago. They can point out the possibilities of a step-up in competition or of a possible easing of competitive factors, depending on whether the flow of new business is slowing down or speeding up.

These figures and trends also serve as a yardstick to measure progress in signing up business that became available in your regional market area.

But regional trends based on this year's first four months compared with the same period of last year aren't necessarily good indicators of how a region's 1961 total volume is likely to stack up against the full year, 1960.

It takes only a look at last year's comparison to see how misleading the first four months can be as an indicator of annual trends.

At the end of April, 1960, awards were off in New England by 6%, in the South by 18%, and in the Mississippi-to-the Rockies region by 1%. Yet, by the end of December, 1960, New England wound up 9% ahead and Mississippi-to-the Rockies was up 19%. The South had clipped its decline to 3%.

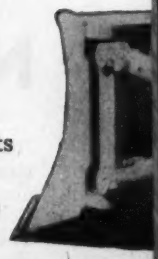
And where the Midwest was up 22% for the first four months, its 1960 total volume was off 2%. The Middle Atlantic's four-month gain of 9% swelled to a 23% jump for the year as a whole.

A much more reliable indicator of what the future holds in store for any specific region is the trend in new proposed work. For the U.S. as a whole, *Construction*

continued on page 50

"C'mon...climb aboard

see how the new '15' beats the tracks off anything in its hp class"



"We want you to have first crack at this new workhorse that'll run rings around anything in its hp class—for the dirt it can 'doze, the bucks it can save, the aches it can end.

"It's the new International TD-15, and we guarantee it can show you in only 15 minutes why it heads up its hp class—and what that means to you in money in the bank!

"We'll show you how and why this new '15' can pick up and 'run' with loads that make other rigs sit and 'spin their tracks.'

"We'll show you 1961 operating ease, reliability, and speed—that can add up to a big bundle of cold cash in a season's run.

"We'll show you get-up-and-go that cuts 'dead-heading' back-up time as it's never been cut before—with the 6-speed, full-reverse transmission, and Shuttle-Bar direction changing.

"We'll prove to you—in your own language—that the new TD-15 can make you far more money, for more years, than anything in its horsepower class.

"C'mon in now and spend 15 minutes on a new '15'! Or call us for a demonstration on your job. See for yourself how it's tailored to your operation."

"Start the new '15's' 6-cylinder Diesel engine with push-button ease—see how you save warm-up minutes with International's famous gasoline-conversion starting. Compare the positive engine temperature control you get with pressure-type cooling and reserve capacity radiation."

International® Construction Equipment

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois
A COMPLETE POWER PACKAGE

and bury the blade...



"Prove the new International TD-15 on full loads, part loads, intermittent loads. Prove it on jobs where *high* torque power and *long* track traction count."



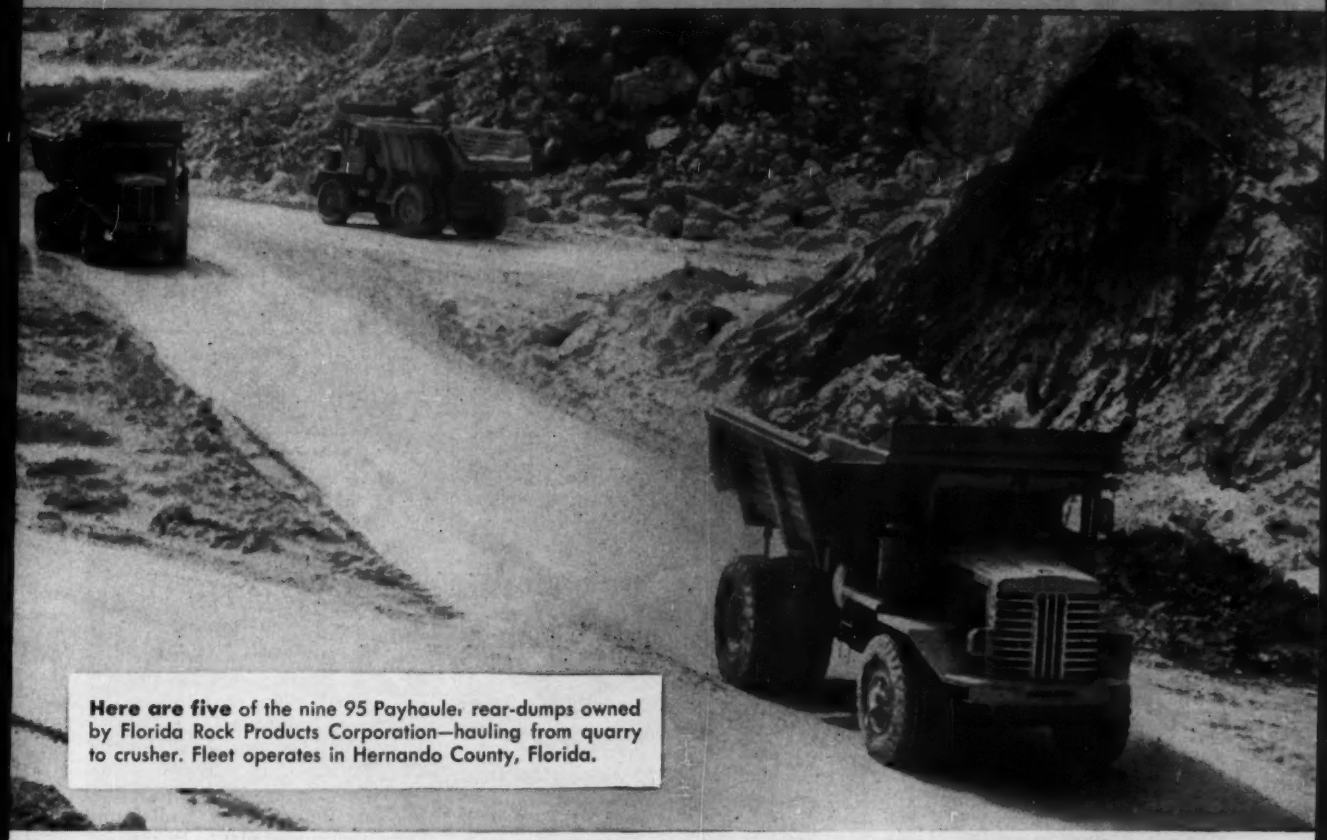
Nine-Unit Payhauler fleet *serves*





Eleven-second dumping with positive power-up, power-down control of body action is provided by the inverted, double-acting hoist system as furnished by International. For similar all-around cycle-speeding advantages in a 19-tonner, see the 65 Payhauler!

Florida Rock Products Corporation



Here are five of the nine 95 Payhaulers rear-dumps owned by Florida Rock Products Corporation—hauling from quarry to crusher. Fleet operates in Hernando County, Florida.

"Our Payhauler units are doing everything we expected of them—and are performing very satisfactorily."—T. S. BAKER, *President*
Florida Rock Products Corporation

Florida Rock Products Corporation moves rock from quarry to crusher with a fleet of nine International Model 95 Payhauler rear-dumps. Payhauler offers an exclusive combination of capacity-adding, cost-reducing features of special appeal for tough, heavy, off-road mine and quarry hauling.

Of all 27-ton off-road haulers, only the 95 Payhauler gives you the ton-shedding, brawn-boosting advantages of the rock-ribbed corrugated body. Only the "95" is plus-powered by the 375-hp DT-817 turbocharged International diesel engine. Choose the "95" with power-shift torque converter or 9-speed air-shift transmission.

Grade charts prove that the "95" Payhauler is in a class by itself for upgrade hauling—giving a speed advantage of up to 44%! Compared to 27-ton competitors, only the "95" is "one hand" power-steered with International's high-leverage enclosed system —or is quick-dumped (in 11 seconds) with power-up, power-down inverted hoist action.

See for yourself in your own off-road hauling how an International Payhauler can increase your capacity, and give you record economy. Let your International Construction Equipment Distributor demonstrate.

International*® *Construction Equipment

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois
A COMPLETE POWER PACKAGE

POKER? Play to win!



How would you play this hand?

One chance in five to fill this flush, so be sure the pot is at least five times as big as the bet. If you haven't passed openers, raise. In general, a timid "calling" game is a losing game. Play percentages, but push them hard.

Here's a sure winner from FORD:

Latest addition to the world famous Fordson diesel line of tractors—the new Fordson Super Major. New disc brakes, differential lock, comfort seat and many other new features give a new peak in Fordson performance.

Still the same reliable engine, however—the dependable 42.6 drawbar H.P. engine which has earned a reputation for fuel economy unmatched by any other engine in its class.

Fordson Dexta Diesel tractor is better, too. Improved hydraulic system, transmission and styling make it a better buy than ever before. Get details from your Ford Tractor Dealer, or write:

Tractor and Implement Division
Ford Motor Company
Birmingham, Michigan

Ford
TRACTORS
EQUIPMENT

Circle 50 on Reader Service Card

Methods' analysis shows that new plans for private heavy construction take about six to 15 months to clear the planning stake and go to contract.

For public works it takes longer—from 1 to 2 yr for about half of the projects going to contract; up to 6 yr for the remainder.

These regional charts show for the first time the details of new proposed projects reported by Construction Daily, sister publication of *Construction Methods*. The dashed line indicates the estimated cost of new heavy construction projects going on the drawing boards in each region. It is the flow of these projects through the planning stage into construction contract status that determine the future volume of contractors' new business.

Through March, the flow of new proposed construction appeared to be upward in all regions except the Far West. These uptrends were diluted a bit when April volume of new proposed work declined in every region. But April usually is a month of decline for new plans in recent years. This pattern showed up clearly in last year's regional charts.

Other broad indicators of U.S. economic activity—industrial production, employment, personal income—have signaled the end of the 1960-early-'61 recession and point to a generally improving trend.

On top of this, businessmen's plans for investment in new plants and equipment point to a sharp uptrend due to break out in the second half of this year. These developments are all working for an expansion in construction contracting as owners are encouraged to initiate new plans and to go ahead with projects for which plans are completed.

So chances are slim that the April slowdown in new plans is a true sign that reversal of the planning uptrend is underway. Even the fact that total volume of new proposed work in April was slightly under last year (the third consecutive month to trail the same month a year ago) is not necessarily a "bearish" indicator.

That's because early 1960 was a period of sharp increases in the flow of new proposed work. The end of 1959's long steel strike and generally rosy predictions of economic growth in the Sixties stimulated planners to fast action.

The long lead time from initiation of new plans to calls for bids means that the new proposed work trend can give contractors plenty of notice in planning for a step-up or a slowdown in new contracts.

This makes the trend indicators a more effective tool for shaping business decisions such as investment in new equipment and hiring and training of additional crews.

SOME BIG CONTRACT AWARDS OF THE MONTH

Flour Corp., Ltd, Los Angeles, Calif. Steam cracking plant at Stenungsund, Sweden. Svenska Esso A.B. Stockholm. Estimated cost, $15 million.

Gust K. Newburg Construction Co., Los Angeles, Calif. Men's detention center, Los Angeles. Los Angeles County. $11,174,500.

Morrison-Knudsen, Inc., Kaiser Co., Perini Corp., Walsh Construction Co., and F & S Contracting Co., Boise, Idaho. Yellowtail Dam and power plant. Bureau of Reclamation, Denver, Colo. $39,809,359.

Matt J. Zaich Co., North Hollywood, Calif. Improvements to Benedict Canyon Channel, Los Angeles and Culver City, Calif. Corps of Engineers, Los Angeles, $4,205,071.

Boyd H. Kline, Bloomsburg, Pa. Low bidder for school at White Haven, Pa. General State Authority, Harrisburg, Pa. $4,102,326.

Massman Construction Co., Kansas City, Mo. Bridge on Lake Charles Expressway, Louisiana. State Highway Dept., Baton Rouge. $4,539,949.

J. B. Allen & Co., Santa Barbara, Calif. Heating plant and laboratory at La Jolla, Calif. University of California, La Jolla. $3,748,000.

continued on page 54



RPM DELO Oil helps move ten million cu. yards of earth fill at Willard Dam

Willard Dam and Reservoir, located near the mud flat shores of the Great Salt Lake, will be enclosed by a 17-mile earth embankment with a maximum height of 35 feet. This giant earth-moving project, under the supervision of the U.S. Bureau of Reclamation, is a real test for equipment . . . and for RPM DELO Oil.

Tractors and Drag-lines of Geo. M. Brewster & Son, Inc., work ten hours a day moving peak loads of mud and grit. Yet, despite long hours of continuous operation under extreme conditions "RPM DELO" eliminates lost time due to lubricant failure.

"We use RPM DELO Oil exclusively in all our diesel and heavy duty gasoline equipment," reports Jim Udall, master mechanic on the project. "Engine parts remain clean and in good condition. We get up to 3500 hours between overhauls on our D-8's, have had no trouble on our Euclid trucks. We've used "RPM DELO" for over three years with excellent results."

RPM DELO Oil reduces wear and prolongs engine life because it clings to parts whether the engine is running or idle . . . hot or cold. Piston rings stay free because an anti-oxidant fights gum and lacquer formation and a special detergent keeps parts clean. Other additives prevent corrosion of bearing metal and crankcase foaming.

Why not try RPM DELO Oil? Chances are it can cut your costs, lengthen equipment life. Just call your local representative or write any company listed below:

RPM DELO

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20 • **STANDARD OIL COMPANY OF TEXAS,** El Paso
CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey - Denver, Colorado

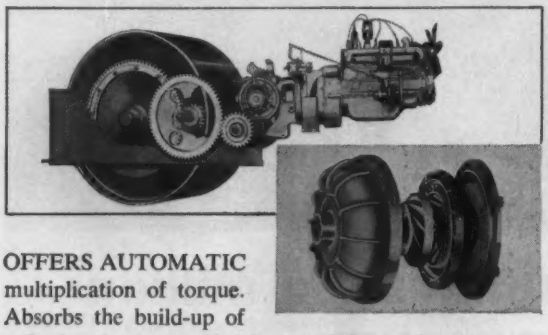
TRADEMARK "RPM DELO" AND CHEVRON DESIGN REG. U.S. PAT. OFF.

Circle 51 on Reader Service Card

You'll profit most when you standardize on GALION ROLLERS AND GRADERS. They're equipped for high-output performance

YOU'LL FIND USERS very enthusiastic about Galion "Miles Ahead" performance on any grading and compacting job. Let's look at two Galion features that assure exceptionally good results.

THERE'S ROLL-O-MATIC DRIVE . . . standard on Galion rollers. A highly efficient combination of torque converter, tail-shaft governor and two-speed transmission that gives you important savings in time and dollars.



OFFERS AUTOMATIC multiplication of torque. Absorbs the build-up of roller inertia. Assures quick, smooth forward-and-reverse action. Saves time.

AUTOMATIC POWER application is another Roll-O-Matic advantage. Permits an infinite number of drive ratios—from top speed to creep-along travel—without overloading or stalling engine. Roll-O-Matic Drive cushions shock loads—prevents wear—saves maintenance.

GRADE-O-MATIC DRIVE, the Roll-O-Matic equivalent for Galion motor graders, is the ultimate in fast, smooth, low-cost grader operation.

EFFECTIVE WORKING SPEED is regulated automatically. Operators benefit by smooth shockless power



transmission without lugging or stalling. They're free to concentrate on more efficient blade work and get more work done.

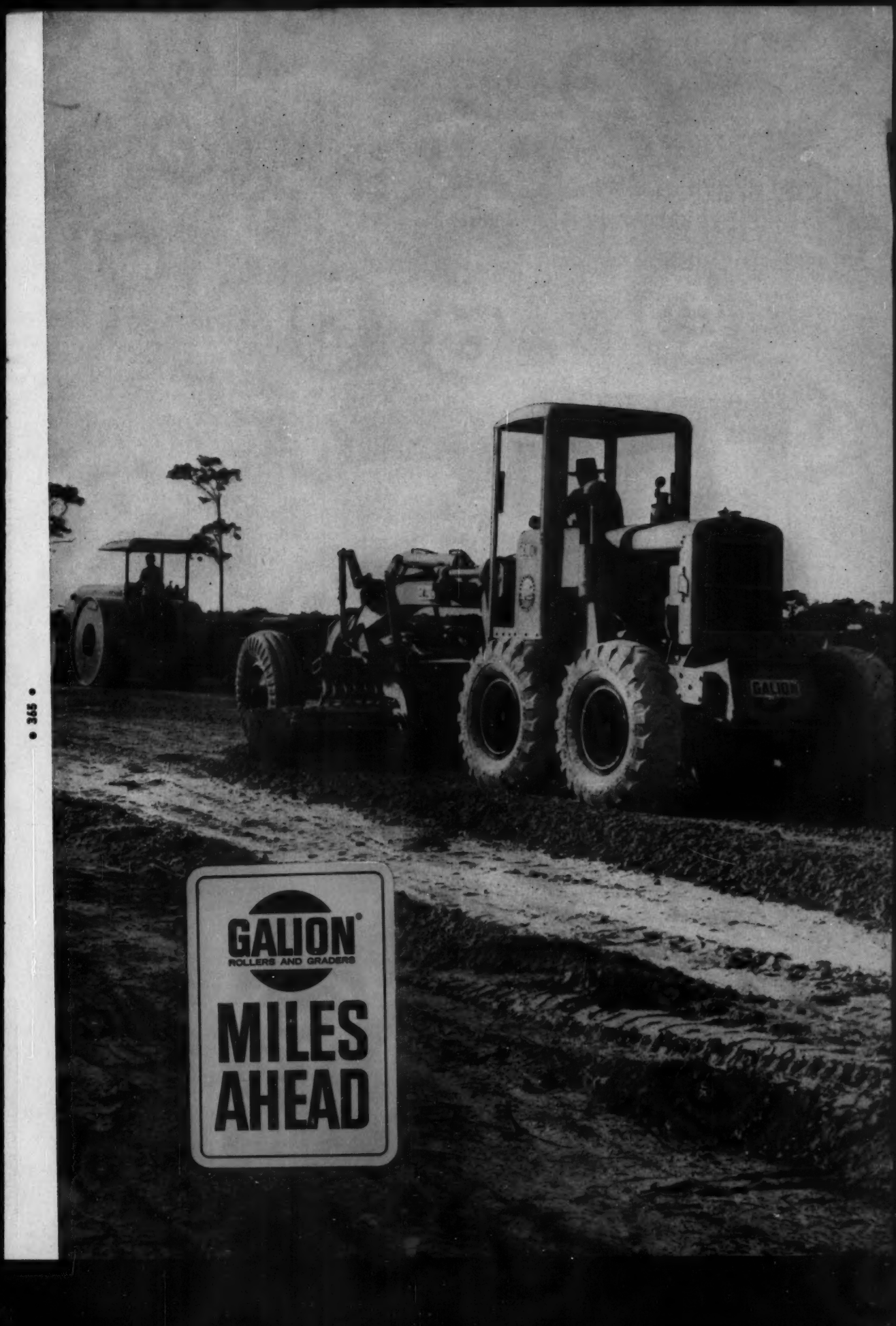
For information on Grade-O-Matic and Roll-O-Matic equipment contact your Galion distributor or write for latest catalog data. The Galion Iron Works & Mfg. Company, Galion, Ohio, U.S.A.

THE GALION IRON WORKS & MFG. COMPANY, GALION, OHIO, U.S.A.

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NEW DIETZ FOLDING BARRICADES

STAND up solidly on the job . . .
FOLD up compactly for carrying, storing!

Rugged and durable on the job, Dietz Folding Barricades are more than equal to the roughest handling, the toughest duty, the nastiest weather. When out of service, they fold up snugly to save valuable space on truck, or in garage or warehouse. Especially designed for mounting Dietz Visi-Flash hazard warning lights, the Folding Barricades shown below offer economies from every standpoint . . . including the purchase price!



341 and 351 BARRICADES

Sixteen gauge welded steel panels. Spring-loaded channel-iron legs fold into barricade body. Finished in Federal Yellow. Height open, 33½". Depth closed, 9". #341: 48" long. #351: 60" long.



360 & 361 BARRICADES

High-visibility panels with alternating 6" black-and-yellow stripes. Bolted construction. 42" long. Height open, 38⅞". #360: 18 gauge steel panels. Depth closed, 2¼". #361: ⅜" weatherproof plywood panels. Depth closed, 2¾".



394 BARRICADE

Glass-beaded reflectorized cross members of 14 gauge steel. 16 gauge tubular legs. Black enamel legs, yellow cross members. 48" long. Height open, 35". Depth closed, 2¾".



334 BARRICADE

High-visibility top panels with alternating 6" black-and-yellow stripes. Narrow bottom panel is yellow. ⅜" weatherproof plywood panels are bolted to steel angle legs. 24" long. Height open, 38⅞". Depth closed, 2¾".

ALUMINUM BARRICADE WARNING SIGNS

Eye-compelling "Scotchlite" reflective emblem, red lettering on white background, mounted on sturdy aluminum panels for use on barricades. If barricade is damaged, sign is removable for use on another barrier. Four mounting screws included.

355 & 357 "DANGER" EMBLEM. 355: 5" x 18"; 357: 5" x 30".

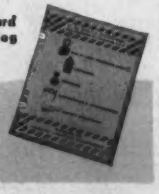
DANGER

356 & 358 "CAUTION" EMBLEM. 356: 5" x 18"; 358: 5" x 30".

CAUTION

R. E. DIETZ COMPANY
Dept. 66
SYRACUSE 1, N. Y.

WRITE for complete Hazard Warning Catalog No. 61.



Go DIETZ® and you go Safely

Circle 54 on Reader Service Card

CONTRACTS AWARDED . . .

continued from page 50

Wilaka Construction Co., Inc., New York, N.Y. Two public schools in Bronx Borough, N.Y. New York City Board of Education. $4,344,000.

Carter Co., Los Angeles, Calif. Nine-story office building in Los Angeles. U. S. Borax & Chemical Corp., Los Angeles. Estimated cost, $5 million.

Nicholson Co., Inc., New York, N.Y. Mill, cement silos, storage hall, and reclaiming tunnel at cement plant, Ravena, N.Y. Atlantic Cement Co., New York. $2.5 million.

Allegheny Contracting Industries, Inc., Pittsburgh, Pa. Roads and bridges in Cuyahoga and Lake Counties. Ohio State Dept. of Highways, Columbus. $6,989,947.

Centex Co., Dallas, Tex. Low bidder for Capehart housing at Offutt Air Force Base, Fort Crook, Neb. Corps of Engineers. $8,190,-154.

Maxon Construction Co., Dayton, Ohio. Nuclear reserach reactor at Iowa State University, Ames, Iowa. Atomic Energy Commission, Germantown, Md. Estimated cost, $3.3 million.

McCloskey & Co., Philadelphia, Pa. Office building in Baltimore, Md. Charles Street Development Corp., Baltimore. $10 million.

Sumner Sollitt Co., Chicago, Ill. Erect apartment in Chicago. Cosmopolitan National Bank, Chicago. Estimated cost is $10 million.

Hawkins Construction Co., and Tolboe & Harlin of Wyoming, Build Missouri River treatment plant. City of Omaha, Neb. $9,-650,000.

Wellmn Engineering Co., Cleveland, Ohio. Construct coal pier at Norfolk, Va. Norfolk & Western Railway Co., Roanoke. Estimated cost is $5 million.

Match Constructors and W. F. Macwell Co., Colton, Calif. Build section of freeway in San Bernardino County, Calif. California Div. of Highways, Los Angeles. $6,839,180.

continued on page 63

NEVER BEFORE SIX-WHEELERS WITH HIGH-POWER, EXTENDED-LIFE V-6 OR TWIN-SIX GAS ENGINES!!!

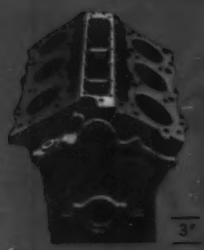
GMC
GENERAL MOTORS CORPORATION
TRUCKS

THE TRUCK TRIUMPH OF THE 60's

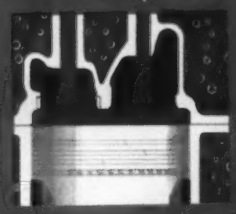
FROM ½-TON TO 60-TON . . . GENERAL MOTORS LEADS THE WAY!

OPEN HERE

GMC Truck & Coach • a General Motors Division • Pontiac, Michigan



BLOCK DEFLECTION VIRTUALLY ELIMINATED with short, stiff design, 3-inch drop skirt, generous inner ribbing and staggered cylinders . . . everything for more strength and rigidity.



INCREASED VALVE AND ENGINE LIFE. Temperature varies less than 4 degrees throughout entire engine. Up to 176 gallons of coolant circulating every minute does away with damaging "hot spots".

EXCLUSIVE GMC V-6 POWER!

Here is the proved six-cylinder principle in a more compact, stronger and easier-to-service engine. Top hauling power over a broad, low rpm range makes rugged, heavy, off-highway construction work easy and permits top-speed highway hauling . . . saves damaging, costly wear and adds to fuel economy. Fully-machined combustion chambers assure precise combustion balance. Cam lobes dip in oil to prevent scuffing, scoring and galling. Short, separate intake inlets provide equal fuel-air mixture for smoother, maximum power from every drop of fuel. Spark plugs are located inside the 60 degree "V" for longer life. Extra-big sodium-filled valves with positive rotators are the best available. Servicing is more convenient with plenty of space around engine. See your GMC Dealer for all the life-extending, profit-producing advantages.

Complete one-stop parts and service is available at every one of nearly 3000 GMC Dealers. For the one nearest you, see the Yellow Pages.

GMC Truck Guardian Maintenance



Haul bigger loads, dependably
Equally loaded axles and t
and axle life. Rubber mounts
maintenance. Inter-axle di
Frame and reinforcement c
loads on most severe on an

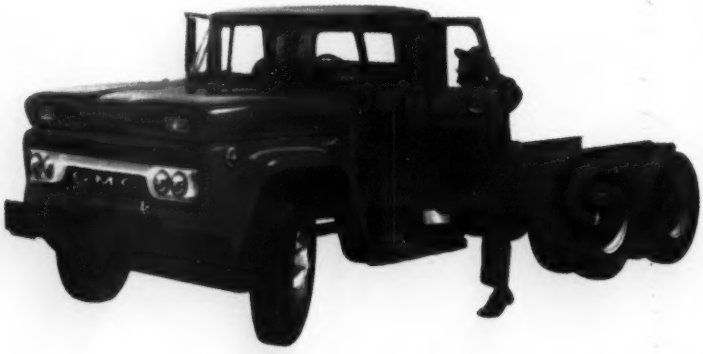


with light-weight tandems.
rue alignment increase tire
and bushings greatly reduce
fferential lock is standard.
ombinations assure capacity
d off-road operations.

CONVENTIONAL IN NAME ONLY!

PRICE These new 105" BBC Conventional Series are the lowest-priced six-wheelers built by GMC . . . surprisingly low buying cost, surprisingly low owning cost.

PERFORMANCE Exclusive 401 V-6 truck-built engine has the most torque of any comparable engine . . . and over a broader, lower, life-extending rpm range, too.



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Equi

Your GMC Dealer listed in the Yellow Pages is waiting to prove wh

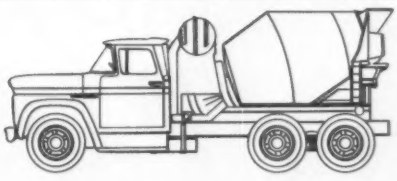
DEPENDABILITY V-6 engines can't be beat. Cabs with double-walls and solid-armor structure can take the most rugged construction usage day after day, year after year. Every truck must pass over 1000 rigid, detailed inspections. And every one is tested on the road for superior construction before it is released from the factory.

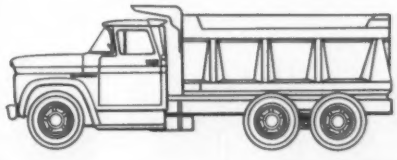
CONVENIENCE It's an easy, convenient step in and out with low cab floor height . . . less awkward, less tiring for the driver. Hood is extra-wide and full-opening to make inspection and maintenance easier and quicker.

QUICK FACTS—CONVENTIONAL SIX-WHEELERS

SERIES	W5000	W5500
GVW	35,000-**37,000** lbs.	43,000-**48,000** lbs.
GCW	50,000 lbs.	60,000 lbs.
AXLES—FRONT	7,000-**9,000** lbs.	9,000-**15,000** lbs.
REAR	28,000 lbs.	34,000 lbs.
BRAKES—HYDRAULIC	953 sq. in.	—
FULL AIR	**943 sq. in.**	1100 sq. in.
ENGINE—V-6 GAS	351 cu. in. 180 hp.	401 cu. in. 210 hp.
	401 cu. in. 210 hp.	—
TRANSMISSION	5-speed direct	5-speed direct
	3-speed aux.	**4-speed aux.**

Equipment in bold type is optional





Here are just two of many popular uses of GMC Conventional six-wheelers.

PULL

ve why GMC six-wheelers are your best construction hauling buy. Contact him today.



Get the most "Go" ever packed into a big-load 90" BBC! With the exclusive Twin-Six under the hood, working ability cannot be surpassed. Top loads and profits are yours, too, with ratings from 45,000 lbs. GVW to 120,000 lbs. GCW.

UNDISPUTED HAULING

Greatest load-moving power of any standard equipment gas engine . . . that's GMC's exclusive Twin-Six! You get highest usable torque and horsepower over a longer, lower rpm range . . . great reserve power to haul loads at part throttle under normal conditions, using reserve only for hills. Results: amazing fuel economy, gear shifting reduced up to 60%, higher sustained road speeds and greatly increased engine life.

Displacement	Max. Torque Range	Max. Horsepower
702 cu. in.	625-630 @ 1400-2100	275 @ 2400

SUPERIORITY



Short 90" BBC dimension and 28" front axle location provides better weight distribution for bigger loads; less over-all length and shorter turning circles, too.

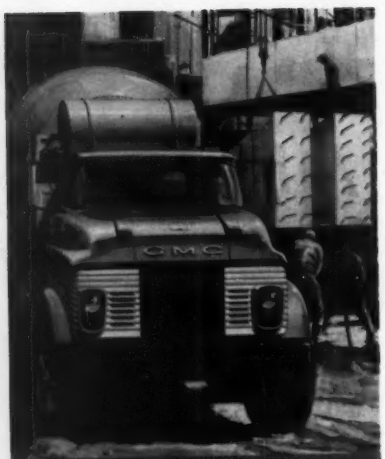
CHOICE OF TANDEMS



You can get high tensile steel or heat treated full-depth frames with reinforcements for every load or use . . . dependable, lasting load-carrying ability.



Improved truck control, more load and road stability are the result of GMC's wider tread, wider spring confera and new steering setup. Capacity—11,000 lbs. standard and 15,000 lbs. with power steering optional.



Diesel-powered 90" BBC GMCs are popular construction trucks. And justifiably so with the V-6 diesel that produces more power per dollar, per pound, per cubic inch displacement... plus many more money- and hour-saving advantages. Your GMC Dealer is the man to see for complete data.

CONTRACTS AWARDED . . .

continued from page 54

Kuhne-Simmons Co., Champaign, Ill. Residence halls at University of Illinois, Urbana. $3,069,900.

Malan Construction Co., New York, N.Y. Hospital at Cleveland, Ohio. Veterans Administration, Washington, D.C. Low bidder at $14,790,000.

Utah Construction & Mining Co., San Francisco, Calif. Phase 1 excavation at Norad Combat Operation Center, Colorado Springs, Colo. Corps of Engineers, Omaha, Neb. $5,918,211.

Perini, Ltd., Ottawa, Ontario, Canada. Alterations and addition to Parliament Building, Ottawa. Dept. of Public Works, Ottawa. $5,088,000.

Auserehl & Son Contracting Corp., Jamaica, N.Y. Central Telephone office and communication system at New York International Airport, Jamaica, N.Y. New York Telephone Co., New York, N.Y. Estimated cost, $5 million.

R. R. Hensler, Sun Valley, Calif. Four-lane freeway in Kern County, Calif. California State Highway Dept., Sacramento. $4,839,-024.

Western Contracting Co., Sioux City, Iowa. Road in Union County, S.D. South Dakota State Highway Dept., Pierre. $4,543,-033.

L.B.M. De Matteo Construction Co., Quincy, Mass. Low bidder for Chelmsford-Lowell-Tewksbury highway. Massachusetts Dept. of Public Works, Boston, Mass.

Dravo Corp., Pittsburgh, Pa. Design and construct new plant at Roemer Works, Farrell, Pa. Sharon Steel Corp., Sharon, Pa. Estimated cost, $17.5 million.

Wright Contracting Co., Odenton, Md. Section of Capitol Beltway in Montgomery County, Mo. State Roads Commission, Baltimore, Md. $3,548,227.

General Construction Co. and Manson Construction and Engineering Co., Seattle, Wash. Approaches to second Lake Washington Bridge, King County,

Quick facts on America's first tower crane

the BUCYRUS-ERIE

MARK I-50



Reaches Over
a 14-story building.

Cuts Cost
of construction 20 to 40 percent.

Eliminates
concrete buggies, runways, elevators, and the need of rehandling material from pickup to delivery.

Speeds Up
construction as much as 33 percent on large buildings.

Moves Up
with the job. Operator's cab moves up the tower as structure grows. Keeps work at eye level for safe, accurate handling.

We can't say the new Mark I-50 will pay for itself on your first job, but we wouldn't be too surprised. It has happened with others.

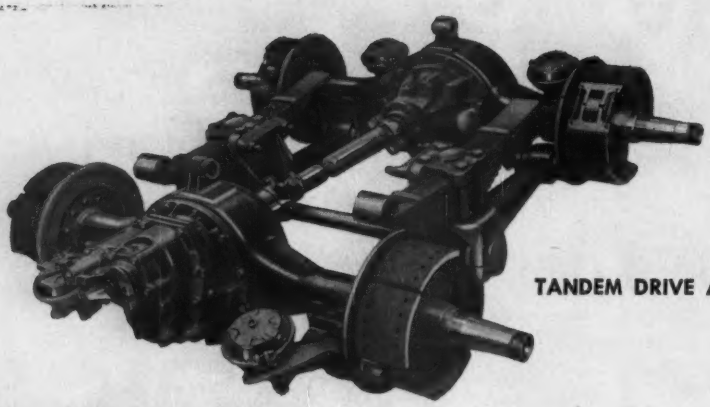
We *can* say this: You have never seen anything like it for efficient performance on high-rise building projects — unless you've seen the Mark I-50 itself. Let us send you the complete details. Bucyrus-Erie Company, South Milwaukee, Wisconsin.

2741

BUCYRUS ERIE

most respected name in the field

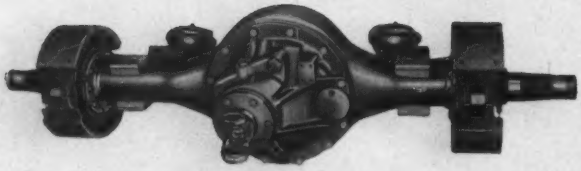
Circle 63 on Reader Service Card



TANDEM DRIVE AXLES

"EATON AXLES"

The famous name that guarantees dependable performance and low hauling costs



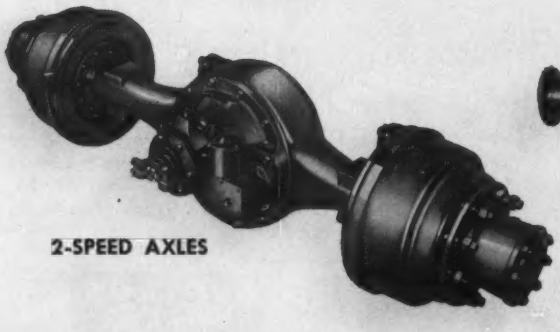
DOUBLE-REDUCTION AXLES

Through half a century, truck operators have learned that they can depend on Eaton Axles to deliver the kind of performance that keeps trucks on the road, cuts operating and maintenance costs, and adds to profit.

Eaton consistently leads the industry—particularly in the field of 2-Speed, Double-Reduction, and Tandem Drive units—with exclusive advancements which enable trucks to haul more legal payload, and add thousands of low-cost miles to both axle and vehicle life. The rugged stamina and efficiency of these Eaton-designed axles have been proven in billions of miles of operation in every type of service.

There's an Eaton Rear Axle best suited for your hauling requirement. Ask your truck dealer to help you specify the right one.

EATON



2-SPEED AXLES



SINGLE-REDUCTION AXLES

EATON *AXLE DIVISION*
MANUFACTURING COMPANY
CLEVELAND 10, OHIO

Circle 64 on Reader Service Card

CONTRACTS AWARDED . . .
continued

Wash. Washington State Highway Comm., Olympia. $3,518,500.

Austin Co., Cleveland, Ohio. Design and construct paper box manufacturing plant at Cincinnati. Lord Baltimore Press, subsidiary of International Paper Co., New York, N.Y. Estimated cost, $5 million.

George M. Brewster & Son, Bogota, N.J. Low bidder for base preparation of Interstate Route 95, Bergen County, N.J. New Jersey State Highway Dept. $3,119,916.

Tom E. Norcross, Inc., Long Beach, Calif. Women's jail at Biscailuz Center, Monterey Park, Los Angeles. Los Angeles County Board of Supervisors. $5,157,000.

Public Constructors, Inc., Blackwood, N.J. Low bidder for construction of 3 mi of Interstate Route 287, Middlesex County, N.J. New Jersey State Highway Dept., Trenton. $3,959,671.90.

Butcher & Sweeney, Fort Worth, Tex. Low bidder for criminal court and jail building, Tarrant County, Tex. $3,084,756.

Campbell Construction Co., Shreveport, La. Low bidder for road in Bienville Parrish, La. Louisiana State Highway Dept., Baton Rouge. $3,714,984.

John Arborio, Inc., Poughkeepsie, N.Y. Road in Ulster County, N.Y. New York Dept. of Public Works, Albany. $3,832,243.

Harmon Construction Co., Oklahoma City, Okla. Medical research center, Oklahoma City, Oklahoma City Airport Trust Authority. $5,531,788.

Caristo Construction Corp., Brooklyn, N.Y. High school in Bayside. Diocese of Brooklyn, Brooklyn, N.Y. Estimated cost, $5 million.

Green Construction Co. Des Moines, Iowa and **Tecon Corp.,** Dallas, Tex. Construct intake structure dam and spillway for the John W. Flannagan Dam and Reservoir near Haysi, Va. Corps of Engineers. $4,034,530.

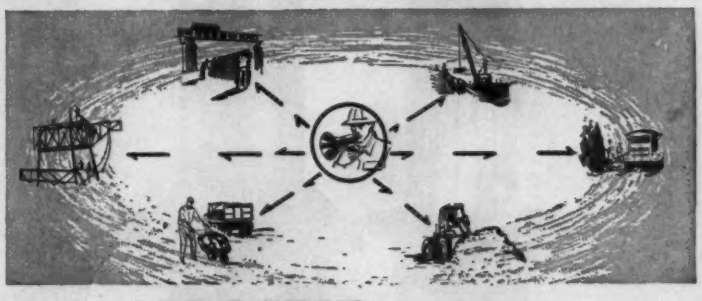


JAEGER
PosiJector
TRASH
PUMPS

- New 3" and 4" self-priming centrifugals pass and positively eject trash while pumping 20,000 and 46,000 gph. Highly efficient whether pumping dirty water or clean.
- "PosiJector" prevents recirculation of solids, channels them into discharge flow.
- Non-clogging strainer passes sticks, leaves.
- Heavy 2-bladed impeller passes solids to 2".
- Suction chamber unbolts for quick inspection, adjustment, cleaning.
- Ask your Jaeger distributor or send for Catalog PT-1.

THE JAEGER MACHINE CO.
Columbus 16, Ohio

Circle 65 on Reader Service Card



PROJECT YOUR ORDERS . . .
LIKE A HARPOON . . . OVER A HALF-MILE RANGE

MAKE 'em hear you . . . *without* screaming your head off! Just speak in a normal voice, and let your Audio Hailer *project* your words . . . anywhere within a half-mile radius.

New "TP" (transistor-powered) Hailer runs on ordinary flashlight cells, weighs only 5¾ lbs. complete, has no external connections whatever, and far out-performs any other type of portable voice equipment.

Save your voice . . . your time . . . your temper! Mail coupon for full description and price list.



AUDIO TP HAILER® transistor-powered PORTABLE MEGAPHONE

AUDIO EQUIPMENT CO., INC.
P.O. Box 192, Port Washington 39, N. Y.
RUSH Audio "TP" Hailer catalog and prices,

Name_____Title_____
Company_____
St. & No._____
City or Town_____
Zone (if any)_____State_____

Circle 250 on Reader Service Card



Together, fellow fasteners, we can build an empire!

There are 125 different kinds of us, all strong and true and ready to carry our share of the load! We're powder-actuated and we mean business. We have threaded studs and drive pins (super-nails!). There's tall ones, short ones, in-between ones; there's fat ones and there's lean ones. Every last one of us can ram home into steel or concrete with ease. One every *fifteen seconds*. We can attach things down on, up against and suspended from. With our eyepins the Hanging Gardens of Babylon would still be hanging! We're the kingpins. We're the elite. We're austempered, to a man. A tougher group you'll never find. So give us a chance, that's all. Give us a chance and by the George Washington Bridge we'll build you an empire!

Our dealers are assistant empire-builders, but they're listed in The Yellow Pages under TOOLS. Talk to them about *your* empire. (Among other things, they'll tell you why we have red tips.)

Ramset®

Olin

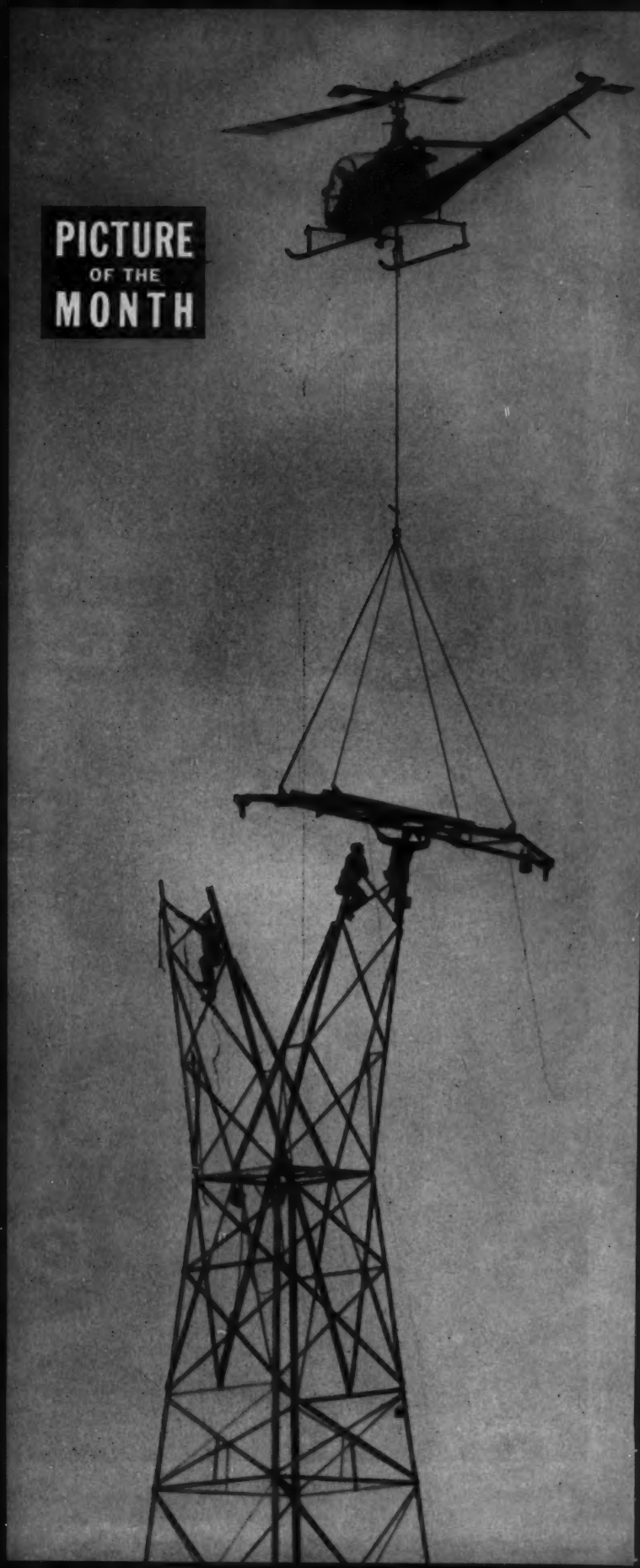
281-F Winchester Ave., New Haven 4, Conn. WINCHESTER-WESTERN DIVISION

Circle 66 on Reader Service Card

Copter Places Tower Steel



PICTURE OF THE MONTH



• A helicopter subbed for a crane to erect steel for two 202-ft transmission towers in Coos Bay, Oregon. Tyee Construction Co. of Beaverton called on the copter after the towers were assembled to the 83-ft level by a barge-mounted crane. Pre-assembled sections handled by the helicopter, a Heller 12E, were kept below a maximum weight of 1,000 lb. Bolting crews, using radio to communicate with the pilot, said that little effort was required to move steel into position. The only drawback came when a section was accidently dropped into the bay. It was fished out by skin divers and placed in the tower after minor repairs.

"I like a man who has the answers"

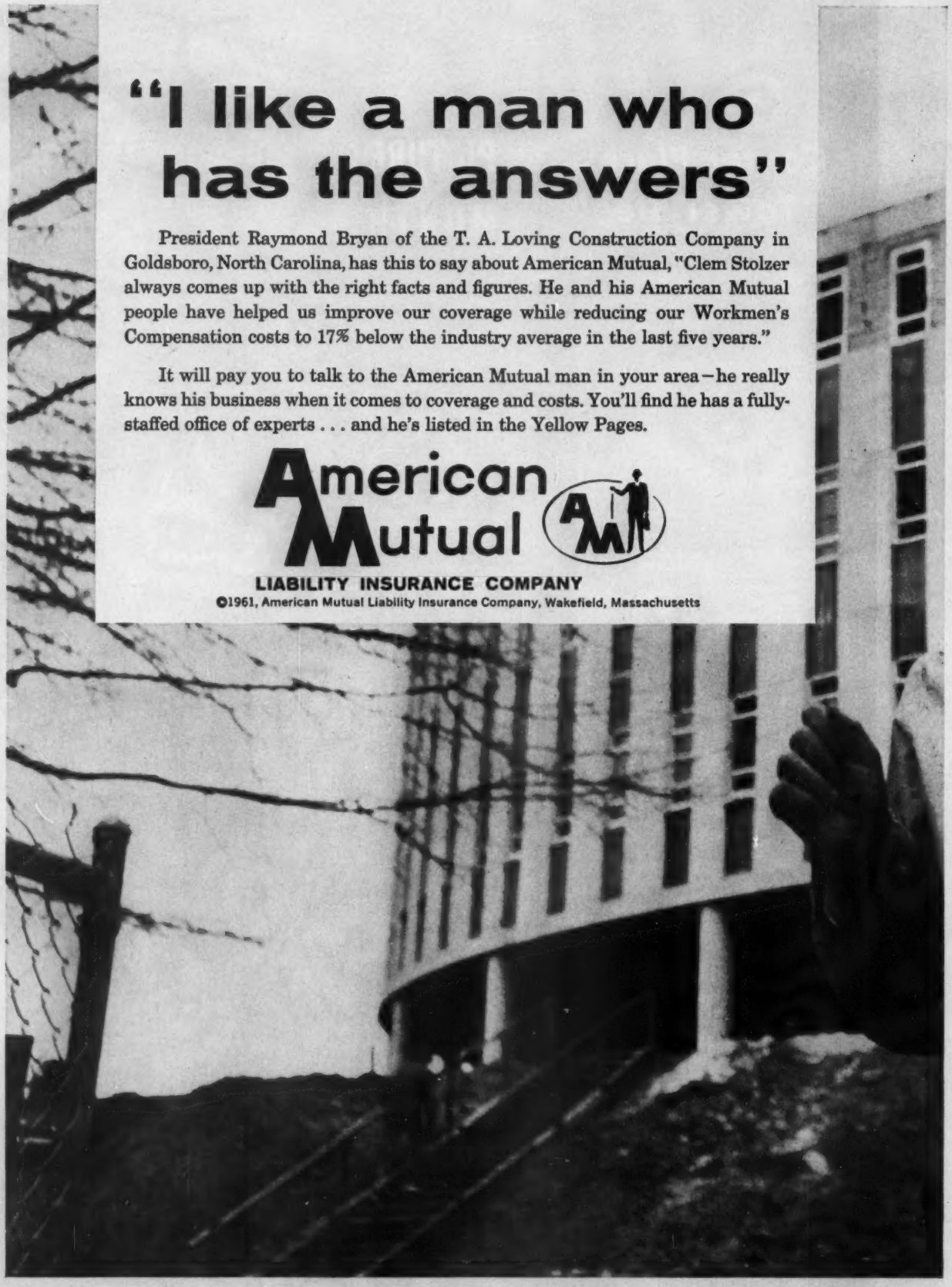
President Raymond Bryan of the T. A. Loving Construction Company in Goldsboro, North Carolina, has this to say about American Mutual, "Clem Stolzer always comes up with the right facts and figures. He and his American Mutual people have helped us improve our coverage while reducing our Workmen's Compensation costs to 17% below the industry average in the last five years."

It will pay you to talk to the American Mutual man in your area—he really knows his business when it comes to coverage and costs. You'll find he has a fully-staffed office of experts . . . and he's listed in the Yellow Pages.

American Mutual

LIABILITY INSURANCE COMPANY

©1961, American Mutual Liability Insurance Company, Wakefield, Massachusetts



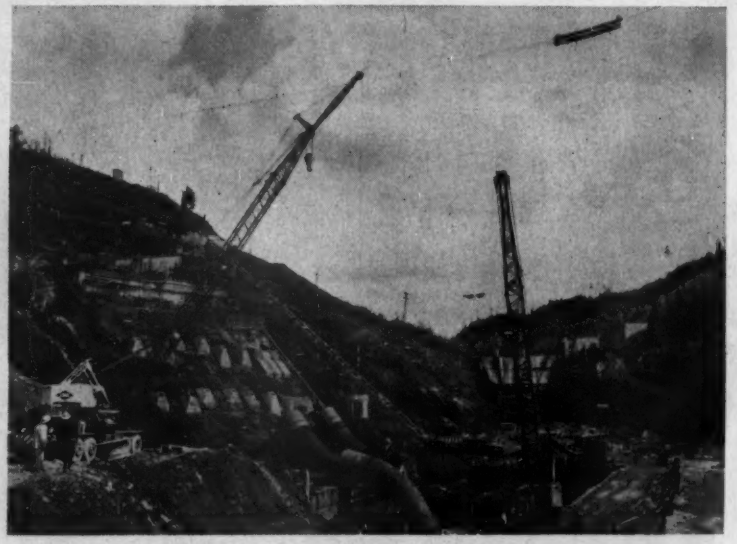


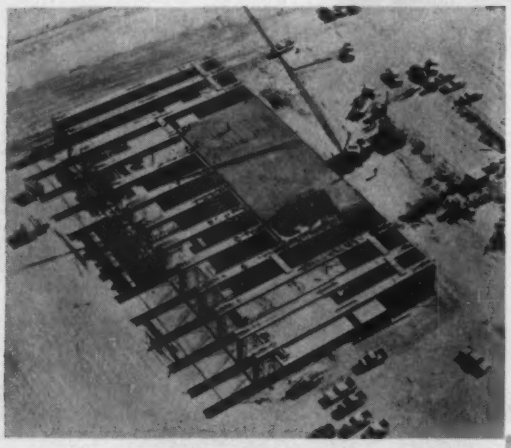
Raymond Bryan, left, is President of T. A. Loving Construction Company, one of the country's major construction firms. Here he discusses insurance with Clem Stolzer, American Mutual Sales Manager in Raleigh, N. C., in front of a new Loving project — the Harrelson Hall classroom building on the North Carolina State campus.

Construction News in Pictures . . .

Perils of Nature

An earthslide at Tacoma's Mayfield Dam on the Cowlitz River caused the penstock damage shown in photo. Perini Corp. of Framingham, Mass., holder of a $10-million contract to complete the project, had to realign a penstock section (foreground) that was pushed out of place. It was raised slightly with lines from the overhead cableway and lined up with the two upright penstock sections. Another elbow section, buried by the slide, was damaged so badly that it had to be taken out for repairs. The contractor has filed a claim for extra work Spillway is shown in background.



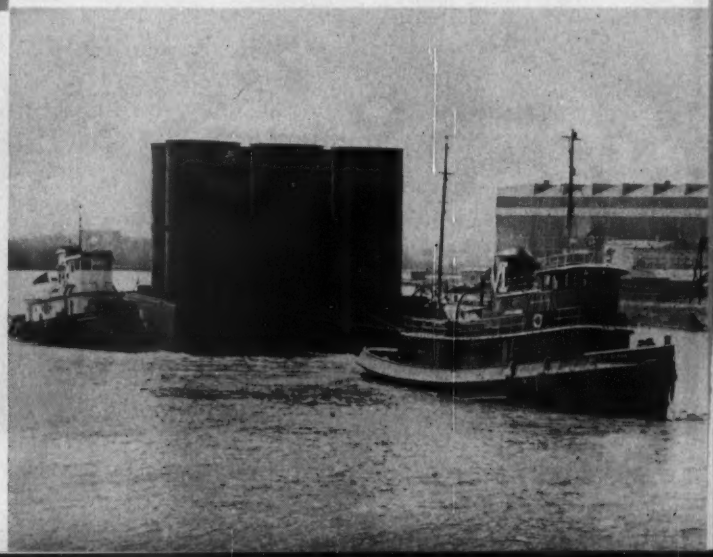


First of 18 Buildings

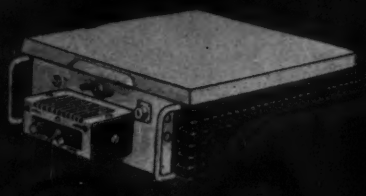
Prestressed concrete tees that span 120 ft provide a 120x240-ft area free of interior columns in this structure going up at Chatsworth, Calif. The building is the first of 18 one and and two-story structures being built by Telecomputing Corp. with its own forces. Each building will have space on the roof to park 90 cars. The first modular structure consists of 13 120-ft tees placed on precast columns at 20-ft centers. Each tee is 6 ft wide and 4 ft high and prestressed to the columns to form a rigid frame. A special post tensioning system helps to keep the roof deck watertight. T. Y. Lin Associates are design engineers.

Long Journey Home

A 215-ton floating steel caisson is shown en route from the Wilmington, Del., shipyard where it was built to Newburgh, N.Y.—a distance of 175 mi. The caisson will form the base for one of the two main piers of the Newburgh-Beacon Bridge across the Hudson River. Construction of the 11 river piers and four land piers for the 1.3-mi bridge is being handled by a combine of Frederick Snare Corp. of New York and the Dravo Corp. of Pittsburgh, makers of the caisson.



VALUE-PACKED



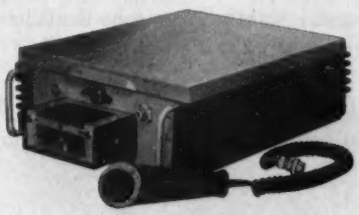
Wisely used transistors enhance the value of RCA "LD" 2-Way Radio and give it built-in dependability

In designing this efficient new "LD" equipment, RCA engineers wisely gave special consideration to the transistor. Only "stock" transistors capable of being serviced with existing test equipment and techniques are used—and only in circuits where they do the best job in cutting battery drain. Tubes are used where they can stand up under high temperatures, heavy voltages—jobs that tubes do best.

As a result the "LD" is not OVERtransistorized, is compact, yet accessible, miserly in power consumption yet value-packed to pack a punch in performance.

Leave the radio on when engine is off—battery drain is negligible. Use it on the roughest roads—transistors and sealed circuits give added assurance it can take it under gruelling conditions.

Specify the RCA "LD" and you can be sure it will stand in back of your endorsement. Lease or purchase plans available. RCA authorized service available. Ask your RCA Representative for complete descriptive literature. Or mail coupon below.



The Most Trusted Name in Radio

RADIO CORPORATION OF AMERICA



RADIO CORPORATION OF AMERICA
Telecommunication Center, Dept. W-203
Meadow Lands, Pa.

☐ Please send me FREE literature on the new RCA Transistorized "LD" Mobile Radio.

☐ Have RCA Communications Specialist contact me and explain why this is today's best value in 2-way radio.

NAME_____ TITLE_____

COMPANY_____

TYPE OF BUSINESS_____

ADDRESS_____ PHONE_____

CITY_____ ZONE____ STATE_____

Circle 71 on Reader Service Card



READ WHY

THIS GRADER IS NEVER IDLE!

An Austin-Western power grader bulldozes, rough and finish-grades, slopes, banks, ditches; plows snow; scarifies, pushes and tows. *How is that for profitable all-purpose service?*

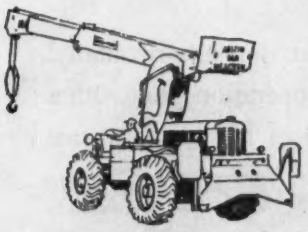
It is never idle because it does so much, so well.

For example, see how efficiently this dozer-equipped A-W backfills. All-wheel steering of both front and rear applies full driving force directly behind 9-ft.-wide dozer blade—largest and strongest offered on any grader. An A-W can turn to other work instantly. No mechanical changes necessary; everything is hydraulically controlled from the cab.

Austin-Western's all-wheel drive puts power up front too, eliminating front-end dead weight. It means balanced blade power; enables an A-W to actually work in sand and mud where others cannot even travel. *And it never gets stuck!*

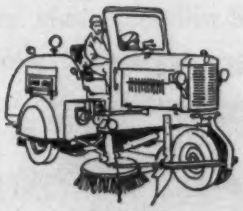
There are 9 models of A-W power graders; 6-wheel Supers, 4-wheel Pacers. Weight classes to 30,000 lb.; power ranges to 165 hp. Why not write today for proof of the time and money saving versatility of Austin-Western graders.





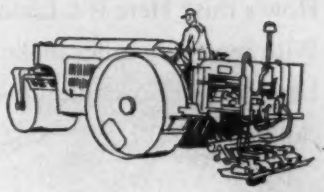
A-W HYDRAULIC CRANES

5 models. Capacities to 11 tons. Self-propelled and truck or stationary mounting. "Live" hydraulic booms extend up to 48 ft. on some models.



A-W MOTOR SWEEPERS

2 models: 2-yd. Model 40; 4-plus Model 60. Safe, easy front steer; full visibility. Simplified design; broom and hopper in rear.



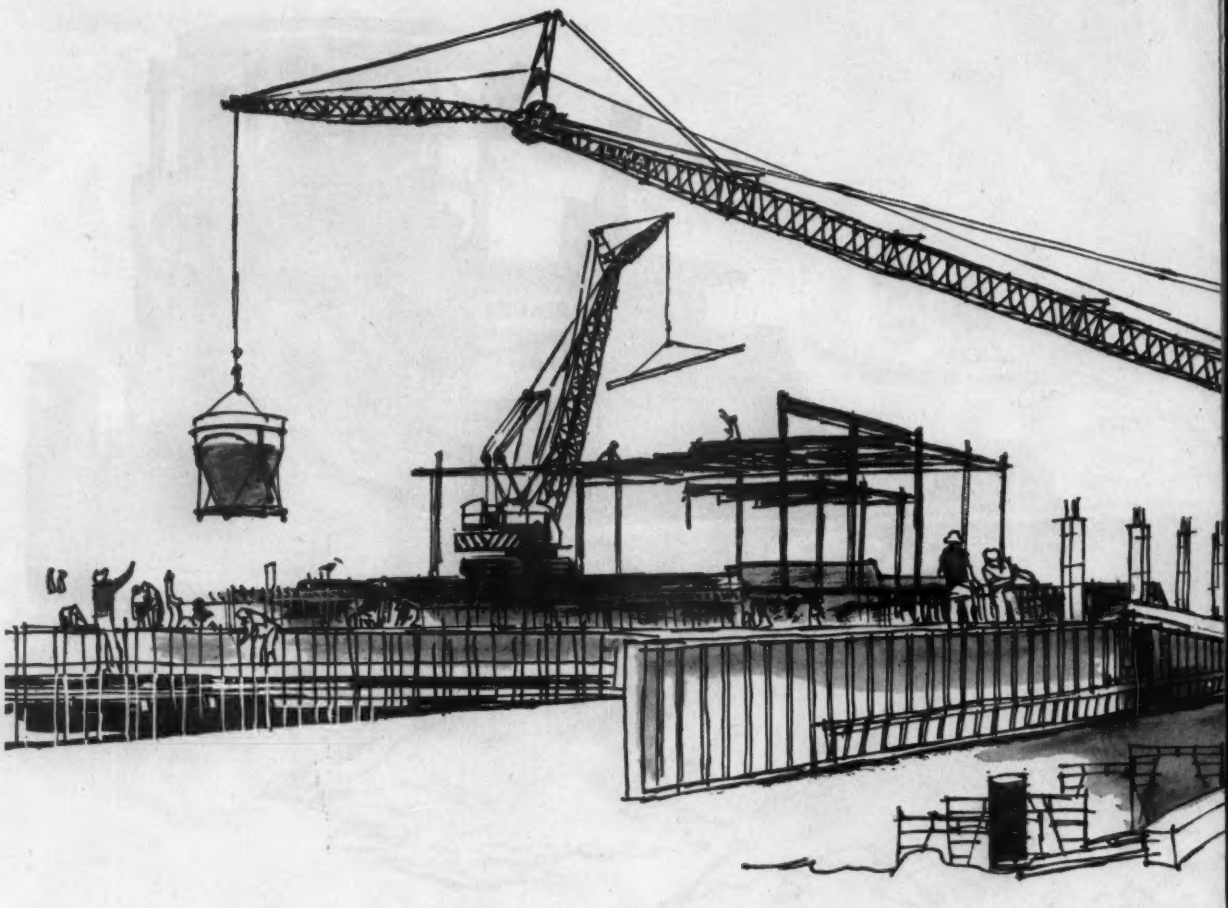
A-W COMPACTION EQUIPMENT

Variable weight tandem, 3-wheel and pneumatic tired rollers; portable tandem; Roller-Compactor; vibratory attachment for most 3-wheelers.

Austin-Western CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Circle 73 on Reader Service Card



TALK ABOUT A BOARDING HOUSE REACH...

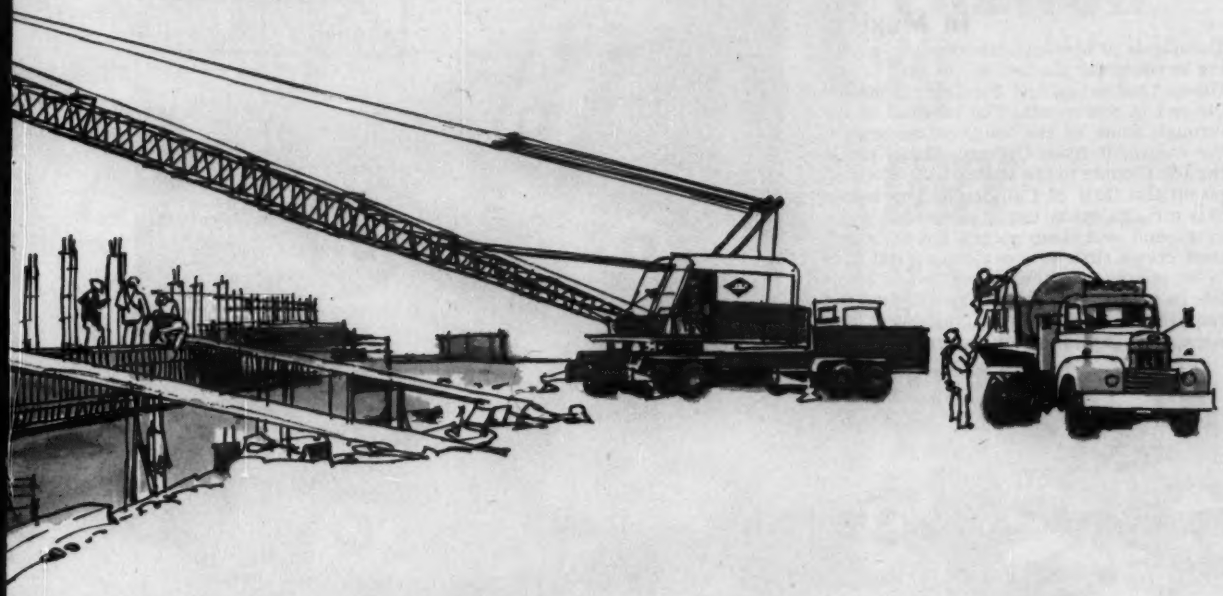
How's this? Here is a Lima equipped with long boom reaching out almost horizontally. With most any other make truck crane this is a tricky low-boom operation—but with a Lima it's an example of strength without excessive weight and of high-performance capabilities.

Like all Limas, the truck cranes are more useful and profitable because they can be counted on to stay on the job without excessive downtime and costly repairs. They're the best you can buy. Lima accepts undivided responsibility for both crane *and* carrier. Booms can be raised from horizontal without assistance; unit easily strips to legal load limits for rapid transport. Choices of carrier drives and power plants. Interchangeable front ends.

Why not ask your nearest Lima distributor today for facts, figures and a demonstration of the Lima type and size best for you—or write to us here in Lima.

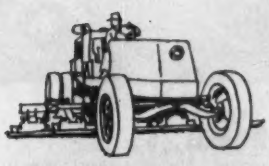
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THE USEFULNESS OF A LIMA

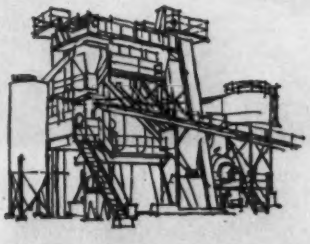


CAPACITIES

TRUCK CRANES—20 to 80 tons, boom-jib combinations to 250 ft.
WAGON CRANES—20 to 75 tons
CRAWLER CRANES—15 to 140 tons
CRAWLER MOUNTED SHOVELS—¾ to 8 cu. yd.
CRAWLER MOUNTED PULLSHOVELS—to 4½ cu. yd.



LIMA MODEL D ROADPACKER—Six vibrating shoes consolidate fast, deep for profitable single-course construction; available in 12-shoe Super model.



LIMA MADSEN ASPHALT PLANTS—available in models with batching capacities from 1000 to 10,000 lb.



LIMA AUSTIN-WESTERN portable and stationary crushing, screening and washing equipment; including jaw crushers, feeders, screens, elevators, conveyors, bins.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division • Lima, Ohio

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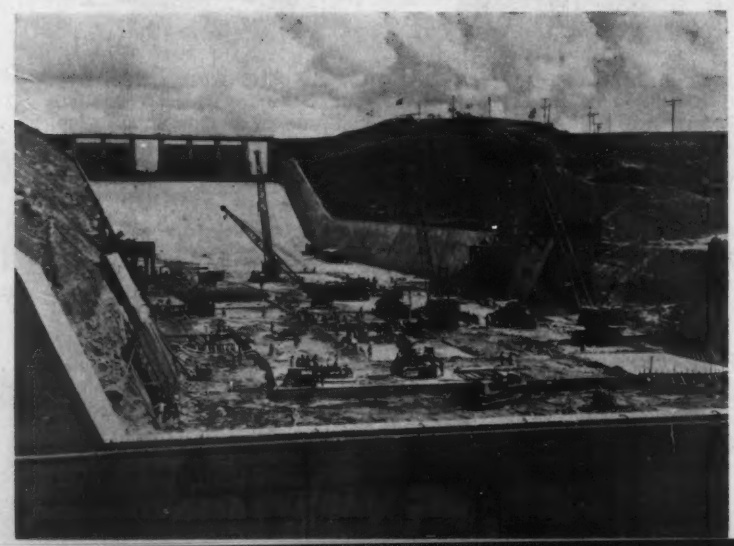
Construction 'Round the World...

In Mexico

Thousands of Mexican laborers are working to complete the last 40-mi link of the 570-mi Chihuahua and Pacific railroad by the end of this month. The railroad winds through some of the toughest terrain on the continent from Ojinaga, Mex., across the Rio Grande to the town of Topolobampo on the Gulf of California. The tracks pass through many tunnels—one is 1½-mi long—and over deep gorges. On the right, steel crews rush to complete a vital link in an almost uninhabited section of Mexico. In photo below, more than 40 men are required to position a rail after rig that normally handles the job had broken down.

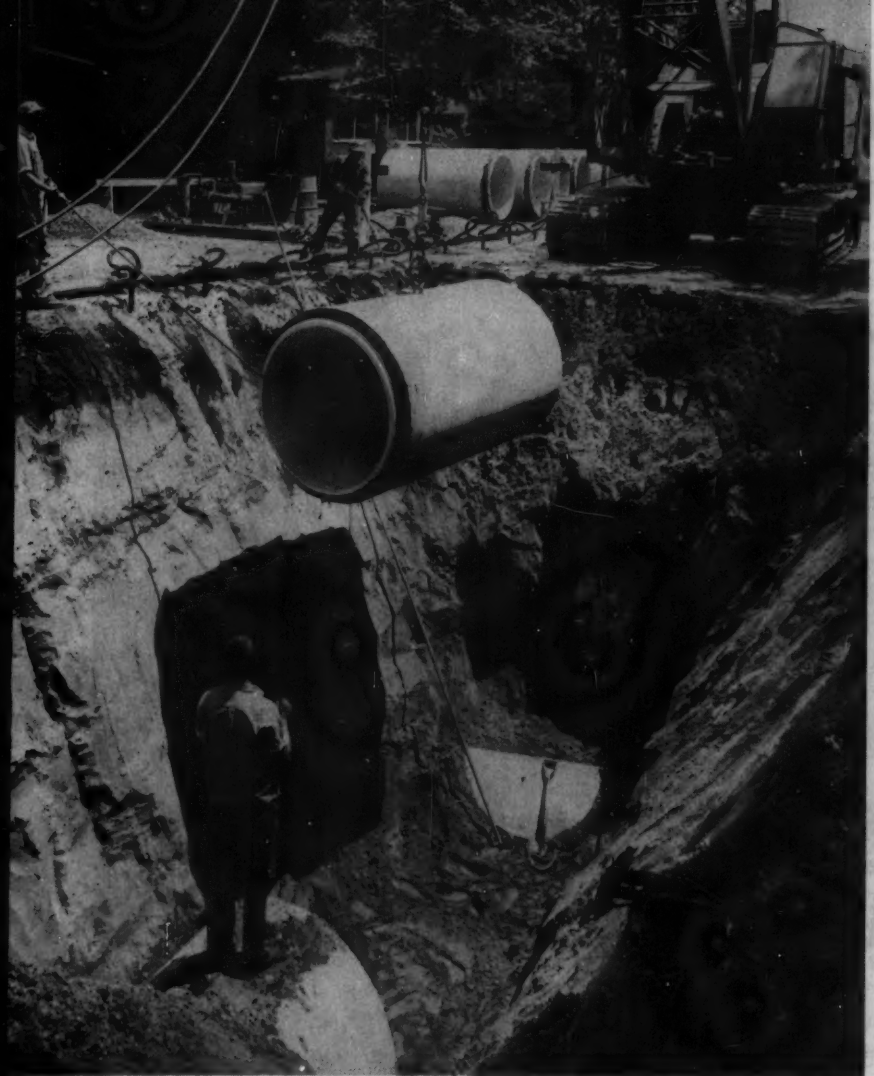






In Brazil

A swarm of men and machines place concrete in the ½-mi-long spillway discharge chute of Tres Marias Dam. When completed this November, the dam will be the biggest earth-fill structure in Latin America. Its crest length is 9,200 ft and it rises to a maximum height of 255 ft above its deepest foundation. A joint-venture group headed by Morrison-Knudsen and including Utah Construction, Henry J. Kaiser, and Raymond International, Inc., are the contractors.



WHEN THE TRENCH IS DRY... YOU CAN REALLY MAKE PROGRESS!

Sewer, Hammond, Indiana—Contractor: Witter Corporation, Schererville, Ind.

Points Worth Noting:

MORETRENCH WELLPOINTS on five foot centers absorb 14 feet of water from fine brown sand, making it possible for the contractor to

PROGRESS at the average rate of 120 feet per day,

ELIMINATE the cost of sheeting by sloping the firm dry banks.

Like to know more about how to make a wet job pay?
Send for Catalog #1000 on THE MORETRENCH WELLPOINT SYSTEM.

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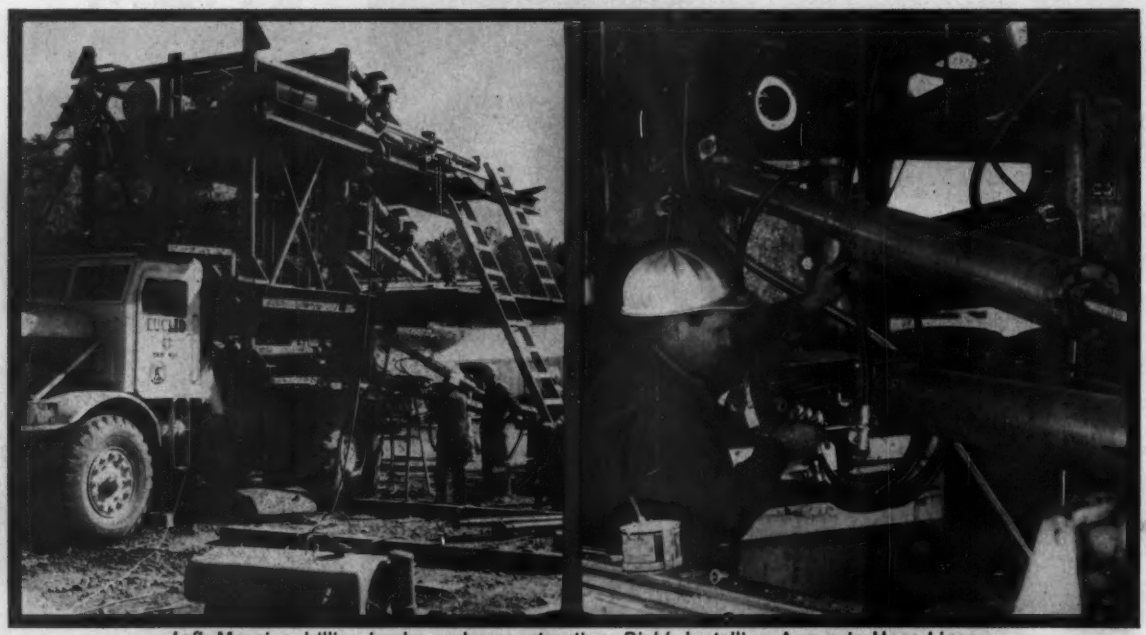
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Dependable Aeroquip Hose and Reusable Fittings help tunnel through a mile of rock

. . . the Fruin-Colnon Contracting Co. and Utah Construction & Mining Co. report on a joint venture



Left: Massive drilling jumbo under construction. *Right:* Installing Aeroquip Hose Lines on multiple hydraulic line connections

On-the-job equipment reliability is a critical consideration in tunnel driving; downtime must be avoided. To assure dependable hose line performance for 10 hydraulically controlled drills mounted on a special rig, the Fruin-Colnon Contracting Co. and Utah Construction & Mining Co., working together on this project, chose Aeroquip Hose and Reusable Fittings for this important application.

This drilling jumbo was assigned the task of boring blast holes for a tunnel through a mile of solid rock—a tough job that required maximum hose line dependability. Operating the controlling booms for these drills under hydraulic pressures up to 3000 psi, Aeroquip Hose Lines were selected for dependability under the most rugged working conditions. More than 96 Aeroquip 1503 Hose Lines were cut, assembled and fitted in the field as required. Detachable, reusable Aeroquip Fittings enabled mechanics to make the right length hose lines as the rig was being built.

Your Aeroquip Distributor is a hose line specialist who will discuss, without obligation, applications helpful to you. His telephone number is in the "Yellow Pages" under "Hose." Ask him for a copy of Industrial Catalog No. 205 or write us directly.



Bulk Aeroquip Hose can be cut to length and installed on the job without special tools. Fittings can be used again and again.

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NOT PERFECT—**but**



When Rudy Nordenburg, Superintendent of the N. D. MacDonald Co., general contractors of the Sacred Heart Church in Seattle, Washington, began forming the 85 ft. high bell tower with UNI-FORM Panels, he expected to maintain vertical accuracy.

On completion of the pour, a check indicated that the top of the tower was ⅛" off plumb—less than .00166" per foot! Rudy and his forming crew couldn't have come closer or been more accurate if they had turned the tower on a giant lathe!

Accurate forming is a built-in feature of the UNI-FORM System. Steel framed, plywood faced UNI-FORM Panels, assembled and locked into a tight form by Uni-Form Ties, ensure "specification accuracy" on any forming job.

Thousands of contractors, forming every type of engineered concrete structures, including buildings, bridges, piers, floodwalls, sewage and water treatment plants, are cashing in on the *profitability* of the UNI-FORM system.

Why not get complete details on this modern way to form concrete today? Write for the Uni-Form Catalog and name of your nearest Distributor.

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EXPLOSIVES





At this Maryland quarry, Ammodyte,® a low-cost cartridged explosive, was used to obtain maximum fragmentation and displacement of this tough, blocky granite gneiss. In the large photo above, notice how the toe is sweeping clear, resulting from well planned bottom initiation with Rockmaster® millisecond delay electric blasting caps. The resulting muck pile is properly laid out for easy, efficient digging.

ENERGY...

Are you aware of the many ways it is cutting costs all along the line? . . . Boosting production? . . . Increasing life of heavy equipment? . . . Allowing more efficient use of total man-hours?

Cheaper blasting materials, new blasting techniques, and improved drilling equipment, have reduced the cost of explosives energy to the point where it is doing work formerly reserved for mechanical equipment. And doing it cheaper, faster, and more efficiently.

In the Maryland quarry shown here, achieving good breakage was a difficult problem. This granite gneiss is tough and blocky. And production demands couldn't wait for drop balling or a blocked crusher. Working with the Atlas Representative, these profit-minded operators modernized their blasting techniques.

By adjusting hole diameter, burden and spacing, and utilizing the wallop of low cost Ammodyte,® these operators are gaining breakage and displacement never achieved before. Production speeds have been increased because they have been able to dig shots quicker and easier and gain maximum crusher production. In the process, they are realizing real savings in maintenance and wear on crusher, dipper teeth, wire rope, and truck bodies.

In coal stripping, other alert, up-to-date operators are using explosives energy to accomplish new tasks. Explosives force is being used to move up to 50% of the overburden directly onto the spoil pile. Mechanical handling costs are reduced, coal is uncovered more rapidly.

In open pit ore mining, explosives factors are being designed to gain additional fragmentation. Much of the material by-passes the primary crusher. Production is speeded, overall costs lowered.

In construction, contractors are finding that explosives energy can save them unwelcome maintenance costs on valuable equipment, and accomplish work faster, more efficiently.

In these times of change, the economics of drilling and blasting have changed also. Looking for ways to reduce blasting costs alone is not enough. The real savings come when you look at explosives energy as a way to reduce overall operating costs.

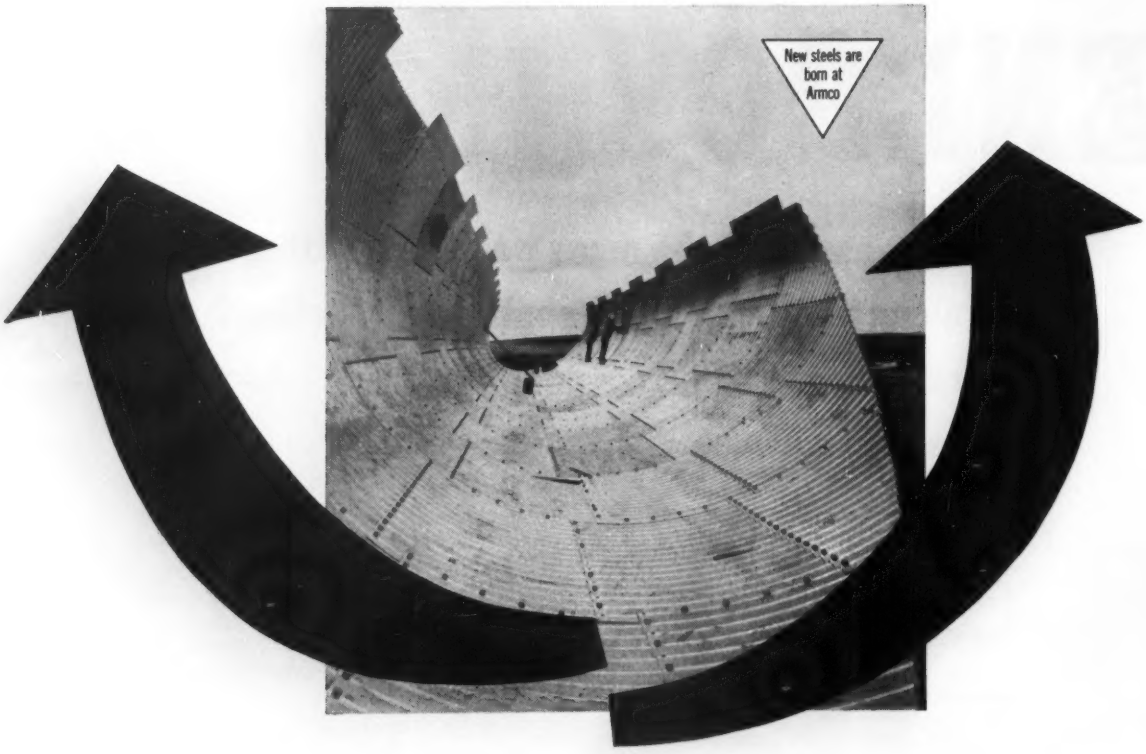
For a closer look at some of the ways explosives energy can lower your costs, investigate Atlas' full line—the only full line of ammonium nitrate and explosives in the industry. Expanded plant facilities are now in production at Joplin, Mo. and Reynolds, Pa., to assure ready availability of all products. And to give you faster, more flexible local service, expanded distribution facilities are being established coast to coast.

Call in your Atlas Representative. His experience with the newest advances in explosives, blasting agents, and blasting techniques can help you measure the relative economy of explosives energy vs. mechanical energy for your particular operation. Ask him about it. Or write directly to:

ATLAS POWDER COMPANY
Explosives Division · Wilmington, Del.

ATLAS EXPLOSIVES

Construction workers bolt side plates on the large MULTI-PLATE Pipe while rolled to the right. Plates on left are to be added.



Large MULTI-PLATE Pipe Assembled at Ice Harbor Dam

...without hoisting equipment!

One of the many unusual construction projects at Ice Harbor Dam, Washington, was the installation of an 18-foot diameter Armco MULTI-PLATE® Pipe. The contractor, Peter Kiewit Sons Co. of Walla Walla, assembled this large-diameter pipe without hoisting equipment!

Construction men devised a unique "rolling" method of assembly. After plates in the lower part of the pipe were bolted together, the structure was rolled to the right to permit easy addition of side plates from ground level. Then it was rolled to the left and the process was repeated.

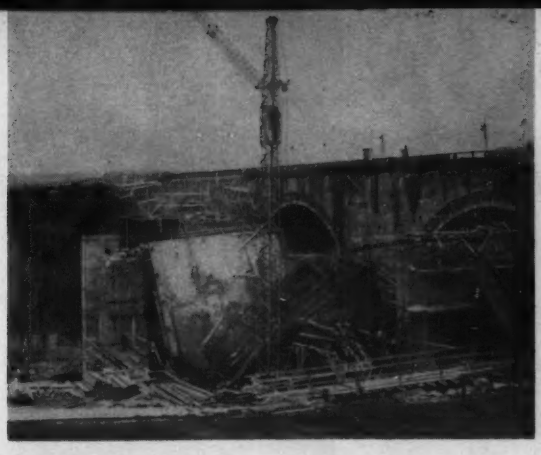
Armco MULTI-PLATE Pipe, Arch and Pipe-Arch have served as dependable drainage structures for more than 30 years. For catalog, showing dimensions and helpful contractor data, write us. Armco Drainage & Metal Products, Inc., 5301 Curtis St., Middletown, Ohio.

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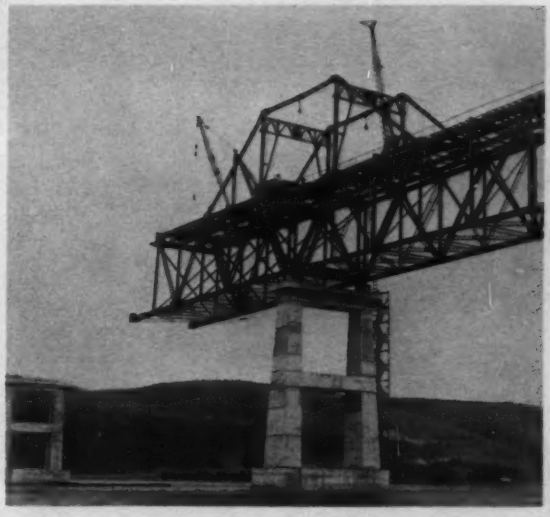
In Germany

Three workers were killed and 26 others slid 120 ft into a valley when the newly poured deck of an autobahn highway bridge collapsed near Linburg. In photo, clean-up crews start to remove 1,200 tons of concrete and steel. Heavy rains and winds were said to have weakened scaffo'ding and falsework, causing the collapse. Eleven other workers were seriously injured.



In The Netherlands

One of seven huge steel and concrete caissons that were used to close off the Veerse Gat estuary in the south of The Netherlands is maneuvered into position next to another caisson by tugs. It took construction crews more than a year to build the caissons, but all seven of them had to be placed within a period of a few days to take advantage of favorable currents. The land reclamation project is under the direction of the Netherlands Ministry of Traffic and Waterways.

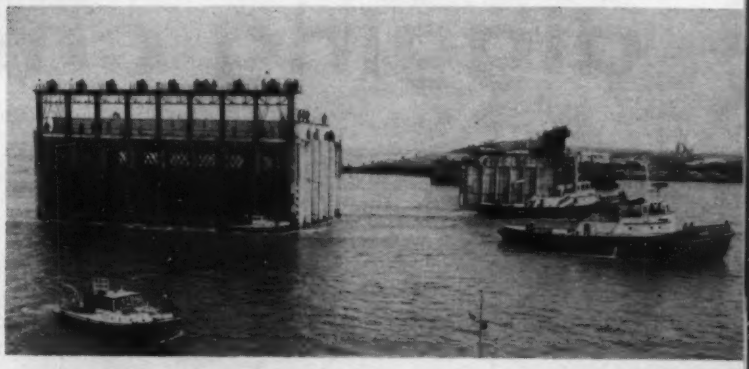


In Canada

An overhead frame designed by Dominion Bridge Co. engineers enables steel to be cantilevered further than would normally be possible, thus cutting down on the need for temporary erection bents. On the Champlain Bridge (above) the frame, which is called a harness by Dominion Bridge crews, has supported spans cantilevered 250 ft.

In Liberia

At a remote site on the west coast of Liberia, crews unload some of the heavy equipment needed to develop the huge Lamco iron ore project. Raymond International Liberia Ltd. holds contracts for the construction of a deep-water port, a 165-mi railroad, and roads and tunnels that are required to provide acces to the mining site in the interior.





With his clamshell busy on another job, this contractor assigned a newly-acquired rubber-tired Tractor Shovel to "fill in" on a basement excavation and discovered . . .

Michigan cuts digging costs 50%

"Experimenting with a new machine on a routine job can sometimes bring amazing results," reports Darrell Bilton, president of Bilton & Bilton Company, general earth-moving firm in St. Joseph, Michigan. "In one particular instance, such experimentation helped us *reduce* basement excavation costs *by one-half.*

"About a year ago we bid a basement job as usual . . . on the basis of what our ½ yd clamshell-rigged crane could do," he continues. "However, when it came time to start the project, the clamshell was busy on another assignment. So, to 'fill in' until the clam could be freed, we drove our 2¼ yd Model 175A Michigan Tractor Shovel to the site.

"There never was any need to bring in the clamshell. The Michigan dug and truck-loaded 525 bank yards of heavy (3200 lb) blue clay in 6½ hours . . . *completing the excavation at such a low cost to us that we refunded the builder 28% of the original bid price.*"

Circle 84 on Reader Service Card

Proves itself on 22 basements . . . other jobs

Even with this favorable experience, Bilton & Bilton Co was reluctant for a time to bid basements on the basis of what the Michigan could do. After all, they'd acquired the unit primarily to truck-load stockpiled excavation, and sand and gravel on larger construction jobs. There were a number of questions to be answered before fully adopting the mobile, rubber-tired unit for this work:

ONE—Could the Michigan hold up under high-speed, hard digging?

ANSWER—Over a year later, having dug 22 basements and completed numerous other excavation jobs, the Model 175A is still 100% available . . . requires nothing more than routine preventive maintenance.

TWO—Could the rubber-tired unit work under unfavorable conditions, for example, rainsoaked clay?

ANSWER—The Michigan dug most of its basements under just such conditions this past spring, reported to be one of the wettest in St. Joseph history.

THREE—Could a Tractor Shovel this size (2¼ yds) be profitably assigned to basement excavation when larger construction assignments were competing for its time?

ANSWER—Because of its mobility and speed (28 mph) in traveling between locations, Bilton & Bilton found the Michigan could work more jobs per day . . . and save 70% of the cost of moving either a clamshell or crawler loader.

"We feel the Michigan has more than proved itself on all types of excavations . . . *in both hard clay and sandy materials,*" Mr. Bilton emphasizes. "Our cost records show it digs basements so economically *we can't afford to use any other type of unit!*"



With above average rainfall, the Michigan Tractor Shovel is often required to operate in sticky mud.



Clean, level floor and trim, straight basement walls left by Michigan please builders, eliminate need for any special cleanup.

Bilton & Bilton especially like the way their 162 hp Michigan leaves walls trim and straight while excavating, eliminating any need for costly cleanup. Also, it's safe to operate around low-hanging powerlines . . . always hazardous for cranes. And the versatile Tractor Shovel easily handles such odd jobs as removing stumps and breaking out and loading concrete sidewalks.

"Basement digging has taken on a new aspect for us since we started using the Michigan," reports Mr. Bilton. "Lack of mass housing in this area makes this kind of work spotty . . . and highly competitive. But the Michigan's low operating costs have put us in a very favorable position . . . so much so that today we consider basement excavations an important, *and profitable,* part of our business."



Another money-making attachment for the Michigan — the Snap-Mount Backhoe — shown here working on a sewer job in Columbia, Tennessee. Backhoe plus bucket enabled this Michigan to handle the complete job . . . digging 90% rock, laying pipe, backfilling and compacting . . . quickly and economically. It can do the same for you . . . in any material. Backhoe fits our 1 to 1¾ yd Models 55A, 75A, and 85A, both new and in-use machines. One man can attach or detach the complete unit in just 30 seconds . . . without any tools.

Bilton & Bilton's Michigan digs both hard clay and sand basements, recently completed this 600 yd excavation in just 6½ hours.



Michigan is a registered trademark of
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Construction Machinery Division

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Where highway construction is through swampy area, Michigan pushes and compacts fill base ahead of dumping scrapers. Spread is made at 8 mph, return at about 14 mph.



Working in dune sand, Holloway's Michigans "pick up" scrapers before they become stuck . . . push them through entire dump cycle and off fill onto return road at speeds up to 8 mph. Scrapers loaded weigh about 107,000 lbs, the Dozer weighs 57,700 lbs. This Michigan develops 290 hp; three other models are available—in sizes from 162 to 600 hp.



With 4 million yards of pure sand to move on a major Interstate Highway project, this contractor decided to utilize an already available scraper spread. But units kept getting stuck in the soft footing. Then he replaced eight push-crawlers with four Michigan Dozers.

RESULT:

Production up 40%... dozer cost down 65%



When Holloway Construction Company, Livonia, Michigan, won a contract for 7.8 miles of Interstate Highway 94, running through sand dunes and swamps alongside Lake Michigan, they were faced with having to move 4 million yards of almost pure sand. Should they use draglines and haul units . . . or utilize an already-available fleet of 26 self-propelled scrapers? Economics dictated the scrapers.

Fill production bogs down

"Right away we ran into trouble," reports General Supt Francis Morrell. "As soon as our scrapers would pull onto the fill, they'd bog down. Eight crawlers, assigned to spread, pull compactors and help out stuck scrapers, proved too slow to keep things moving. Also, operating in high gear was skyrocketing track costs".

"Then we replaced the eight 45,000 lb crawlers with four 57,770 lb Michigan Model 280 Tractor Dozers," Mr. Morrell continues. "Within a week, the rubber-tired units had increased production on the fill by 40% . . . and, reduced overall dozer fleet owning and operating costs by 65%".

7 to 8 mph dozer push clears scraper traffic jam

According to Holloway officials, the Michigans' speed was the major factor in increasing production. Before, crawlers were too slow to reach scrapers before they became stuck. Now, the Michigans are able to "pick up" loaded haul units as they enter the work area . . . and travel with them down the fill as they *dump and spread at speeds up to 8 mph*. As soon as one scraper has thus been boosted through its entire dump cycle and off the fill—a distance of about 350 ft—the Michigan quickly returns to pick up another. Meanwhile, the Dozer's big 29.5-25 tires compact the fill both ways.

Normal dozing passes achieve 95% compaction

"One 290 hp Michigan can get a loaded 19 yd scraper dumped and off the fill in just 65 seconds . . . and it gets back to the next scraper in 45 seconds," reports Supt Morrell. "Fill damage from scraper pumping action has been eliminated . . . *and we are getting 95% compaction without the use of special equipment*".

One Michigan's 10 hour production: 20,000 yds spread and compacted

Some of the fills on this job are 62 ft high . . . with cuts up to 92 ft deep providing 60% of needed material. Other 40% must be hauled from borrow pits up to 1½ miles away. Where scrapers are on the long hauls, Holloway officials report each Michigan Tractor Dozer is spreading and compacting between 6,000 and 7,000 pay yds (per cross-section measurement) per 10 hour day. *On short scraper hauls*, 500 ft one-way, *each Michigan spreads up to 20,000 pay yds per day.*

"Maintenance simple, availability excellent"

"We find Michigan maintenance simple . . . and availability excellent," reports Supt Morrell. "Their speed in boosting scrapers—plus their ability to stay clear of incoming haul units—has eliminated all congestion on the fill. We feel our four Michigans have given us a new approach to fill spreading and compacting!"

Michigan is a registered trademark of

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Construction Methods AND EQUIPMENT

JUNE, 1961

VOLUME 43 • NUMBER 6

HENRY T. PEREZ, Editor

Step in the Right Direction

THERE IS GOOD NEWS for the contracting industry—indeed, for the entire country—in a new agreement to help prevent strikes on construction jobs.

The Associated General Contractors of America and the seven major international unions involved in building and construction have entered into a voluntary plan for settlement of any labor dispute, other than a jurisdictional one, without strike or lockout. Main feature is a 15-man Joint Appeals Board to which either contractor or union can submit a dispute. The Board will reach a decision, which will be final and binding, generally in not more than 14 days.

The international unions involved are the bricklayers, carpenters, operating engineers, hod carriers and laborers, iron workers, cement masons, and teamsters. Each union is represented on the Board by one top-ranking member. Seven prominent contractors represent management, and there is an impartial, non-voting chairman.

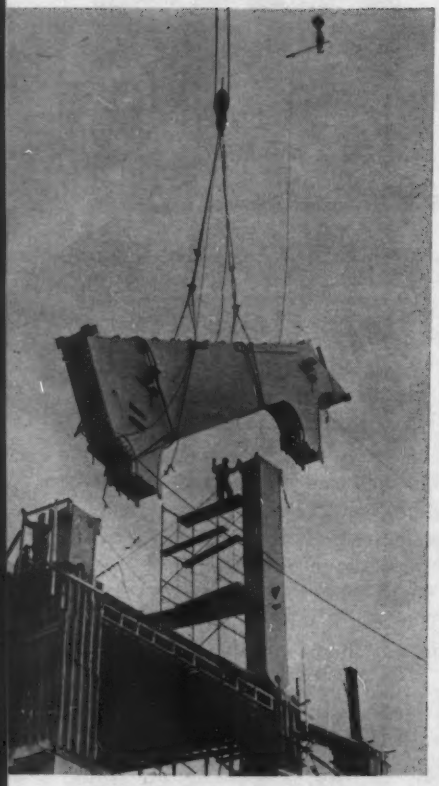
To appeal to the Board, a contractor need not belong to AGC, but he must submit the dispute through that organization's headquarters. Appeals from labor locals go through the international union involved.

Before an appeal is submitted, both parties to the dispute must agree to accept the decision of the Board. Also, they must have exhausted fully the procedures and practices of collective bargaining. And the Board will not consider an appeal where other existing procedures govern the dispute and provide for final and binding settlement without strike or lockout.

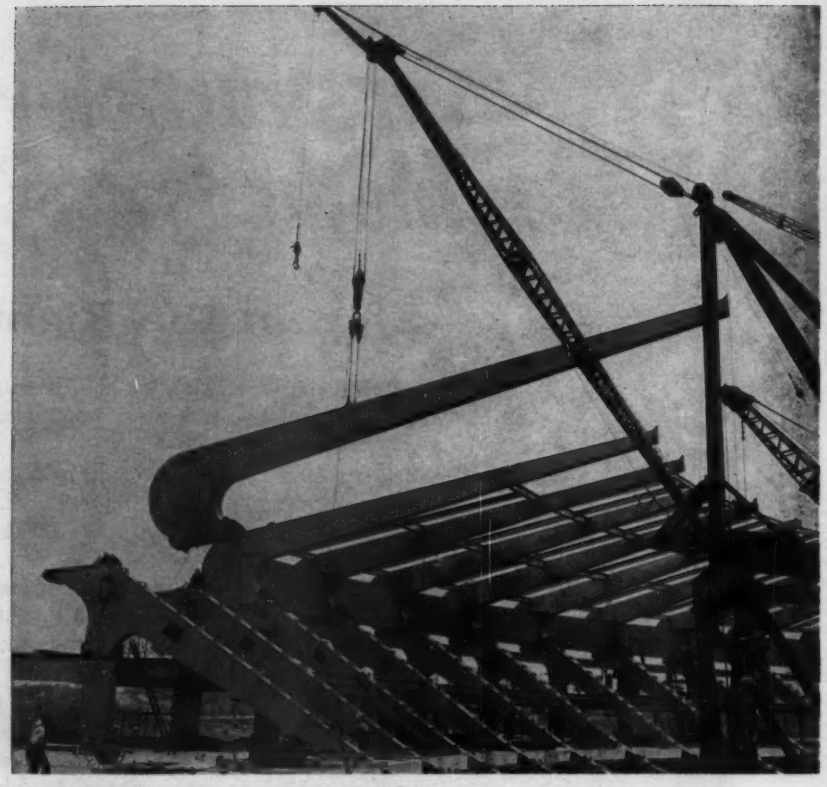
The new plan for labor peace comes on the heels of a somewhat similar agreement between the National Constructors Association and 18 international unions. Their National Disputes Adjustment Plan also calls for final and binding adjudication of disagreements by a joint National Arbitration Board. But, as with the Joint Appeals Board, parties to the dispute first must agree voluntarily to abide by the Board's findings.

It can only be hoped that, when disputes arise, these agreements to accept the Board's findings will be made. Obviously, the contractors' associations and the international unions will urge their members to use the Boards' machinery as alternatives to strikes, lockouts, or litigation. But high resolves and pleadings from headquarters are not always heeded by individual contractors or by local labor.

Nevertheless, the AGC and NCA plans are a big step forward toward labor peace. If those on the firing line will only use them faithfully, labor-management relations in the contracting industry will be a lot closer to coming of age.



FIRST STEP—Traveler derrick erects lower rib assembly atop pin-mounted columns.



SECOND STEP—Traveler positions cane-shaped upper arm that cantilevers to form rib of stadium roof.

When football season arrives, this stadium will be ready thanks to a well-planned erection sequence

Cranes Place Four

By WILLIAM MOONEY
Assistant Editor

TWO LONG-BOOMED CRAWLER CRANES and a traveler derrick team up like a double-play combination to erect steel frames that support the upper stands and roof of the new District of Columbia Stadium in Washington, D. C.

The double-deck baseball and football stadium is a 600-ft-dia bowl. Enclosing the lower stands is a four-level concrete concourse structure topped by 66 steel frames shaped like boomerangs. Two rows of massive concrete columns support both the concourse levels and the steel frames. The lower arms of the frames hold the upper stands and the cantilevered upper arms form the ribs of the roof. Spacing of the frames is about 30 ft. A Bethlehem Steel crew is erecting four of them each week.

Two steel columns pin-mounted to the roof of the concourse structure support each rigid frame. The frames are fabricated in two sections. The roof arms are from 70 to 75 ft long and the seating arms vary in length from 60 to 80 ft. The all-welded box sections of the frame arms are made up of 1¾-in. flange plates with ⅝-in. webs at areas of stress.

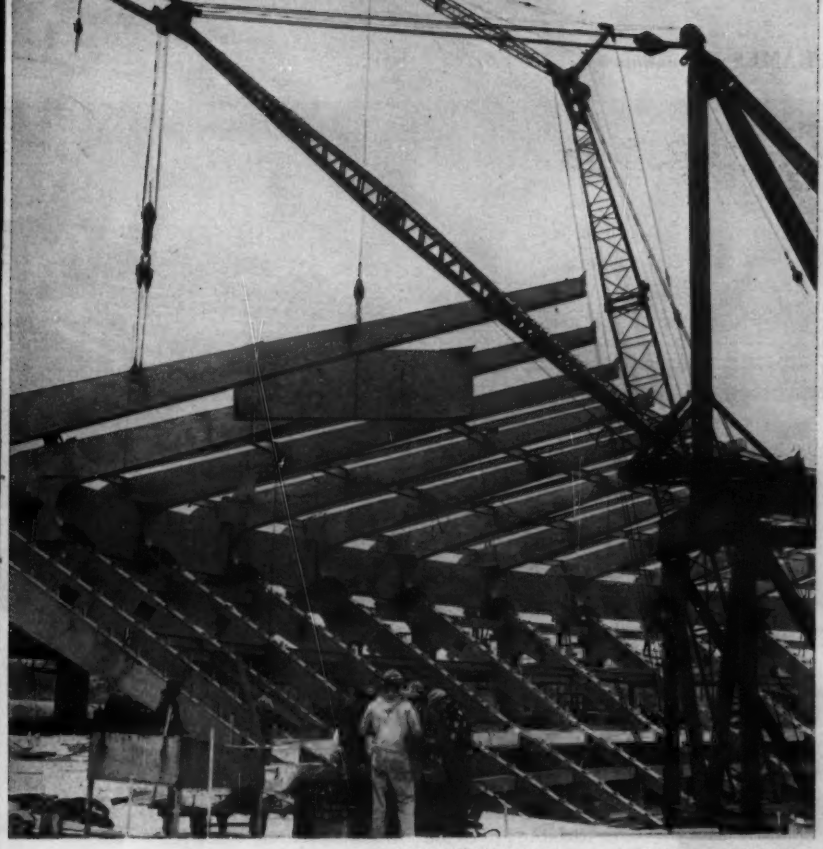
Bethlehem had to erect the first two frames at the same time and hold them in position while connecting struts were installed to brace them. Even with three cranes, this was a tricky job—double-handling was necessary.

One of the two big crawler cranes is a 50-ton Lima with a 130-ft boom and a 30-ft jib. This rig, besides assisting in erection, unloads the frames from trailer trucks and spots them on cribbing. The other crawler is an 80-ton Lima 1250 that carries a 140-ft boom and 30-ft jib.

The third piece of erection equipment is a 35-ton stiff-leg derrick mounted atop an 85-ft-high tower that rides rails inside the concourse structure. The traveler has a 90-ft boom and a 15-ft jib.

Frame erection started at two column lines adjacent to an expansion joint in the concourse structure. First, the traveler erected the outer column for one frame and the 80-ton crawler erected the corresponding unit for the other frame. While both cranes held fast, a crew installed wire rope guys to free the traveler for further erection. Then the traveler erected a 30-ft-long strut between the two columns, and the 80-ton crane also let go.

A crew on the ground temporarily spliced the



THIRD STEP—While traveler holds roof rib, 80-ton crawler erects heavy strut that braces frames.



PINNING—At temporary splice, workman drives home pin that holds arm



WELDING—Splice device maintains gap as welder makes connection.

'Boomerang' Frames a Week

short inner column and the lower rib of each frame. After the traveler erected these two assemblies, the 80-ton rig placed another 30-ft-long strut between them.

Next, the crew installed guy wires to brace the two rib sections. Then the traveler erected one of the cane-shaped roof ribs, that, with its haunch, weighs 27 tons. This was the ticklish part that called for adroit double-handling.

While the traveler held the roof rib of the first frame in position, the 50-ton crawler hooked onto it with its falls and took up part of the load. Then the crew drove home the temporary splice pins at the haunch, and the traveler let go while the crawler held fast.

Next, the traveler erected the roof rib of the other frame and held it while the 80-ton crawler installed a heavy strut and three roof purlins between the ribs. The crew then rigged wire rope guys in the plane of the roof. The 50-ton crawler and the traveler continued to hold the ribs, maintaining the proper gap at the splice, until the crew had snugged the pins.

The 50-ton crane and the traveler then released their load and, while the 80-ton crane completed the roof framing in the first bay, the traveler moved on to start erection of the next frame.

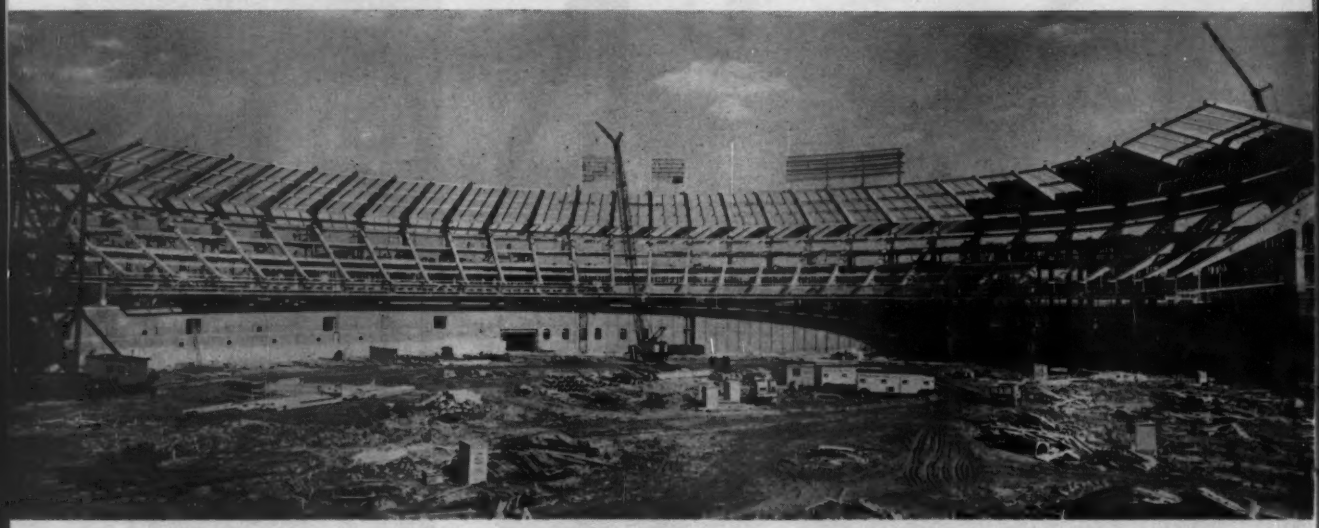
From here on out the crew is erecting one frame at a time, working around the circle in one direction. After erecting the outer column and the lower rib assembly of a frame, the traveler holds the upper rib while the 80-ton rig installs the roof struts that brace the frame.

Bethlehem guyed several bays as erection progressed to increase the lateral stability of the steelwork. All field connections are made temporarily with high-strength bolts. Welders follow closely behind to make the permanent connections. Field welds are radiographed.

The traveler erects three frames from one 60-ft-long segment of track and then a crew leapfrogs the track ahead. Mats made of 10x10-in. timber and held together by steel angles carry each 100-lb rail. Each mat measures 9x12 ft. Gage of the track is 54 ft. The rails are curved to match the radius of the concourse structure.

To move along the track, the traveler pulls against a deadman buried beyond the end of one of the rails.

continued on next page



INSIDE BOWL—Cranes that erect steel maneuver alongside concourse structure where lower stands will be built.



MATS CARRY RAILS—Traveler erects frames from 60-ft segment of track, then crew leapfrogs rails ahead. Mats made of 10x10's hold 100-lb rails.

Bethlehem fabricated 38 of the 66 frames at their Steelton shop. No two of them are alike. They required special jigs to assure proper fit in the field. Any deviation of a fraction of an inch at the haunch of a frame would be magnified to several inches at the ends of the cantilever arms.

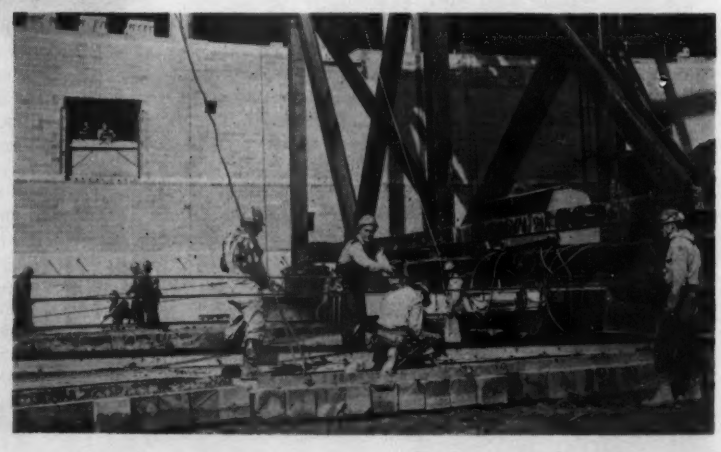
Pittsburgh-DesMoines fabricated the other 28 frames, all of which are identical. Frame sections were shipped to the site on trailer trucks. Altogether, the frames and connecting struts weighed 7,350 tons.

Contractor Keeps Ahead of Steel

Thanks to an assembly-line forming system, general contractor McCloskey & Co. of Philadelphia manages to keep ahead of the fast-working steel erectors. The contractor has almost completed the circular concourse structure, which is divided into eight sections.

McCloskey works on four sections at a time. Each of four forming crews works on a different level. A fifth crew forms the undulating ramps that cantilever from the exterior columns, and a sixth crew forms the roof of the concourse structure.

Traveler Follows Circular Track



TRAVELER—Cables tighten as traveler pulls against deadman buried at end of one rail and crane pulls from end of the other to move rig along rails.

Assembly-Line Forming Keeps Concrete Ahead of Steel



PREASSEMBLED FORMS—Crane places a 30-ft-long girder form.

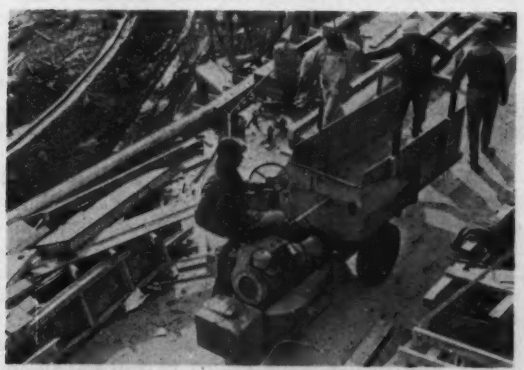


STEP-BY-STEP ERECTION—Crews place Spanalls that hold sheeting to cap orderly erection sequence.

The job-built forms are preassembled in sections to speed erection. Altogether, the contractor has eight sets of forms on hand. While half are left in place during concrete curing, the other half are being erected and poured. It takes a crew two weeks to get a section ready for a pour. By that time, the forms in place at the lower level are ready to be stripped and the crew jumps them to the next higher level of the section.

Form erection follows an orderly sequence in which one form component is handled at a time. First, McCloskey forms and pours the columns. Then a crane places one-piece girder forms that span 30-ft across the bays between pairs of columns. Then the crane places beam forms between the girder forms. Next, the forming crew places Spanalls and tops them with plywood sheeting. After steelworkers install reinforcing, the section is ready to be poured.

The preassembled girder forms make the assembly-line technique possible. The girders are 20 in. wide and vary in depth from 36 to 48 in. Two 4x6-in. stringers span the full 30-ft length of each girder form and hold the other form components.



HANDY RIG—Sideboards added to a Prime Mover power buggy make it a versatile materials carrier.

Shoring consists of double 4x4's held together by Ellis shore clamps.

Atop the stringers are 2x4-in. pudlocks at 1½-ft centers. These extend about 1 ft beyond each face of the girder and hold the ⅝-in. sheeting that forms the soffit. A 4x4-in. kicker at each side braces the side panels, which are preassembled in 8-ft-long sections. Backing up each side sheet are a 2x4-in. bottom plate and a 3x4-in. top plate. Between the plates are vertical 2x4-in. battens at 1½ to 2-ft centers. A 4x4-in. waler links the side panels near the top.

The preassembled beam forms are similar in make-up to those for the girders. Adjustable Spanalls between the beam forms take care of the varying chord lengths across the bay. Length of the Spanalls varies from 10 to 16 ft.

McCloskey pours a section with two cranes, a 35-ton P&H and a 25-ton Lorain. One is on the inside of the concourse structure, the other is on the outside. Each crane handles a 1½-yd laydown bucket.

On some pours, three Primer Mover M-30 power buggies transfer concrete from a 3-yd hopper to the forms. Each buggy has a capacity of 2/3 yd. By adding side-boards to the bucket of one buggy, the contractor has converted it to a handy, all-round materials carrier.

The contractor pours twice a week on the average. Each section takes about 650 yd. The crew averages about 75 yd of concrete placed per hour.

McCloskey is making an all-out effort to complete the stadium in time for the kickoff of the football season this fall. Bethlehem will complete steel erection this month and then construction of the lower stands inside the concourse structure can begin.

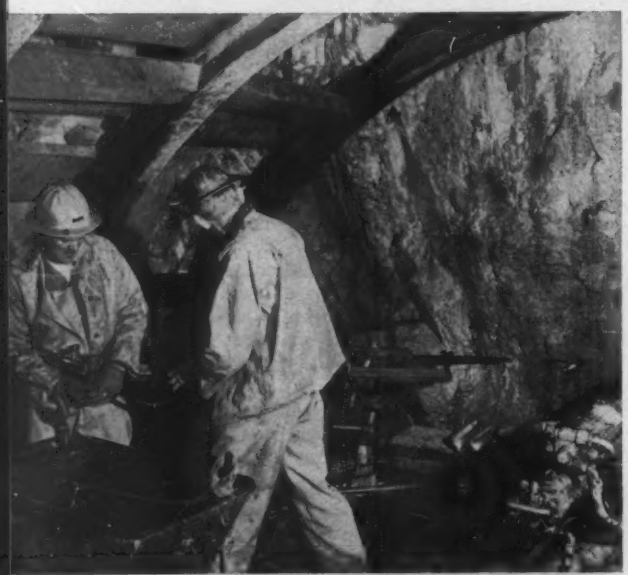
Men on the Job

Frank De Moss is project manager for McCloskey. Superintendent is Lonnie Sciambi. Dick Logan is engineer and James Merkle is carpenter foreman. Resident engineer for Dahl-Erwin-Osborn, consulting architects and engineers, is Carl Staker.

Twin Tunnels



Rubber-Tired Jumbo Mounted on Euclid truck chassis, jumbo for one tunnel carries seven drills in three banks. It is pulled out of shaft to provide access for mucking rigs, which also are mounted on rubber.



UPPER DECK—Crews man drifters from the top of three-deck truck-mounted jumbo. This tunnel is being driven from two portals.

CREWS DRIVING TWO SIMILAR TUNNELS at Trinity Dam, near Redding, Calif., are using a rail-mounted jumbo and mucking equipment in one shaft and rubber-tired rigs in the other.

Which type of equipment is most efficient? There's no clear-cut answer to that question because each type has its own advantages and drawbacks.

For one thing, the rail-mounted jumbo remains in the tunnel during each shot and throughout the mucking cycle, but the rubber-tired jumbo must be pulled completely out of the tunnel. Because this shortens the cycle time between shots, it would appear to be a distinct advantage for rail-mounted equipment.

But because of the superior mobility of the rubber-tired rigs, the contractor is able to drive from two portals in one tunnel and cut hauling distances for mucking rigs. Rail-mounted equipment is working from only one portal.

The joint-venture contractor, Winston-Greene-Drake of Shasta, Calif., is working both tunnels at the same time. Both are horseshoe-shaped in cross section with an excavated diameter of about 22 ft with grades ranging between 0 to 1%. Finished diameter of the concrete liners will be 18½ ft.

The rail-mounted jumbo remains in the tunnel during each shot and throughout the mucking cycle, but it is pulled back about 150 yd from the tunnel face during these operations. The rubber-tired jumbo must be pulled out of the tunnel completely because both the jumbo and the mucking equipment are wider than half the width of the tunnel.

Jumbos Carry Seven Drifters

The rail-mounted jumbo, which was built by Ray D. Moran of Los Angeles, is a two-deck rig equipped with seven Chicago Pneumatic G 700 booms with a CP 60-N motor drifter on each boom. Two drills are on the bottom of the jumbo, two on the first deck, and three on the top deck. Mucking rigs in this tunnel are cars pulled by Plymouth locomotives. A Conway 100 mucker also is used.

Production with this equipment averages about 32 ft for a three-shift day and remains fairly constant as the tunnelers advance. The entire 8,256-ft tunnel will be completed from one portal.

The rubber-tired jumbo is mounted on a 36T Euclid truck chassis and carries seven drills arranged in three banks, similar to those on the rail-mounted rig. Chicago Pneumatic booms and drifters also are the same models as those on the other jumbo. Mucking equipment includes an Eimco 105 and Koehring Model 60 Dumptors.

Production in this tunnel varies because it takes more time to move the jumbo in and out of the tunnel as the distance from the portal to the face increases. Maximum daily production near the

Test Rigs on Rubber and Rails

portal was about 42 ft and decreased to about 36 ft by the time the tunnelers had completed 2,100 ft.

To keep cycle time as short as possible, the contractor switched from one end of the 4,475-ft-long tunnel to the other at about the halfway point. This operation did not present any problems because the self-propelled, rubber-tired machines simply were driven from one portal to the other.

Moving the rail-mounted rigs would have been complicated because special tracks or transportation equipment would be needed. Also, such a move would be pointless because the jumbo is not pulled out of the tunnel between shots and the distance from the portal to the face has very little effect on cycle time. It averages about 4 hr; drilling accounts for about 45 min of this time.

Rock formations along the lines of both tunnels are almost identical. They consist of decomposed granite with iron pyrite in the seams. A series of major and minor faults increase the fracture quality of the rock.

Drilling and Blasting Are Similar

Drilling and blasting operations in the two tunnels are similar. Because of soft rock, the contractor is keeping the depth of rounds to about 4 ft; deeper rounds would overbreak and would be hard to control (occasionally, 6½-ft-deep holes are drilled where the rock is hard). Advances per round in the 4-ft holes average 4 ft; in the 6½-ft holes advances are about 6 ft. No burn holes are required in either tunnel.

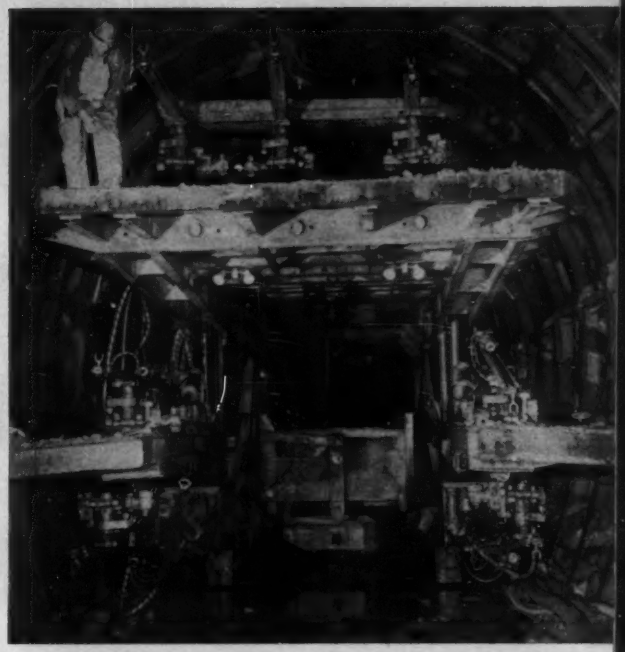
The number of holes per round varies widely as the ground conditions along the tunnels change. In some places as few as nine holes per round are sufficient; in others as many as 85 holes are necessary. In one spot, rock was so soft that mucking equipment removed it without drilling or blasting.

The contractor uses an average of 2.7 lb of explosive per cu yd of rock. The explosive is American Cyanamid's CX333, basically a 65% NG equivalent ammonia dynamite with an increased cartridge count. The cartridges are 1¼ in. in dia and 12 in. long. The explosive is balanced for fumes for tunnel work. Atlas No. 6 electric blasting caps with ¼-sec delays set off the charges.

Winston-Green-Drake is working three shifts five days per week with a force of 189 men. Only tunnel driving and related excavation are in progress at present.

The joint venture contractors on the $11.6-million Bureau of Reclamation project are Winston Bros. Company of Minneapolis; Green Construction Co. of Des Moines; and Johnson, Drake and Piper, Inc., of Minneapolis. Winston is the sponsor.

Project manager at the Spring Creek tunnels is J. L. Feller, and project engineer is Hank Parker. C. O. Pierson is tunnel superintendent. Mechanic foreman is Jim Hedges, and excavation foreman is Don Cordero. Bruce Witcher is office engineer.



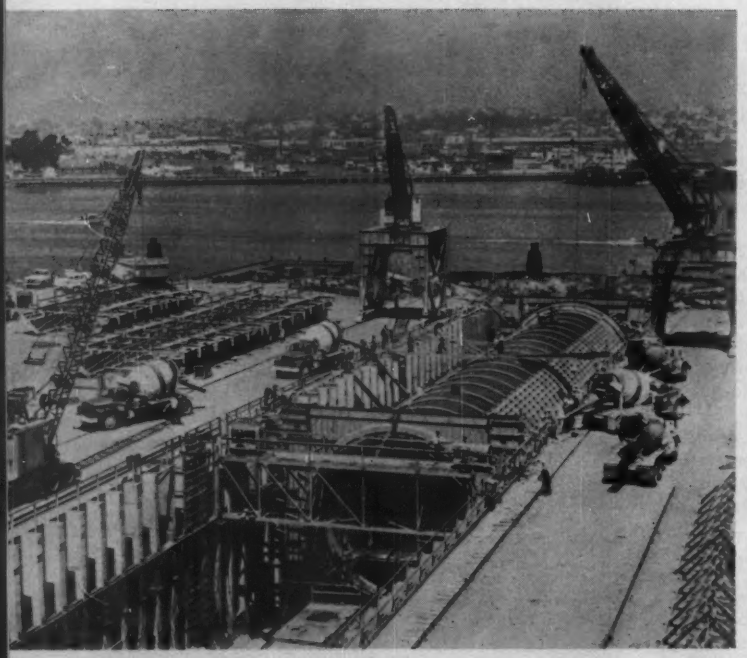
Booms and drifters are the same Chicago Pneumatic units used on the rubber-tired jumbo. The rig is pulled back after each shot and mucking cars, which also are on rails, pass under it.

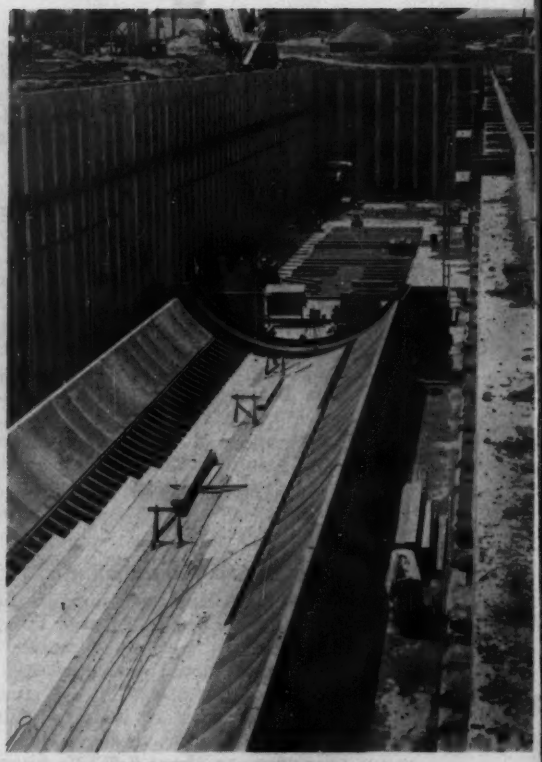
Rail-Mounted Jumbo



LOWER LEVEL—Man handles drifter from lower level of rail-mounted jumbo. Production averages a steady 32 ft per 24-hr day.

Tandem Construction of Tube





INVERT Lowest part of invert form is wood lagging. Its primary function is to protect tube's waterproofing membrane, which will be applied before concrete is poured. Rest of forms are steel.

Twelve 200-ft-long tubes make up the underwater portion of a trench-type California tunnel. By casting them in tandem pairs in a drydock, movement of forms, travelers, and gantries is simplified. Two of the 37-ft-dia units are built every 400 working hours.

IN A DRYDOCK specially built for the job, concrete tube sections 37 ft in dia and 200 ft long are being precast at the rate of 1 ft per hr for a subaqueous vehicular tunnel in California.

The efficient casting program is based on a tandem arrangement of two tube sections in the dock. There is a 40-ft clear space between them. Construction operations are repeated in sequence from one tube section to the other.

Thus, form travelers and reinforcing bar gantries can move on rails directly to the adjacent tube. And forms, travelers, and gantries can be removed through the 40-ft space when their work is done.

A complete cycle from freshly dewatering the dock to launching two tube segments is programmed for 10 weeks or 400 working hours. Thus, the two tubes totaling 400 ft in length are produced at the rate of 1 ft every working hour.

Twelve of the 37x200-ft units totaling 2,400 ft in length are being precast for the Webster St. Tube, a trench-type tunnel between Alameda and Oakland under an arm of San Francisco Bay.

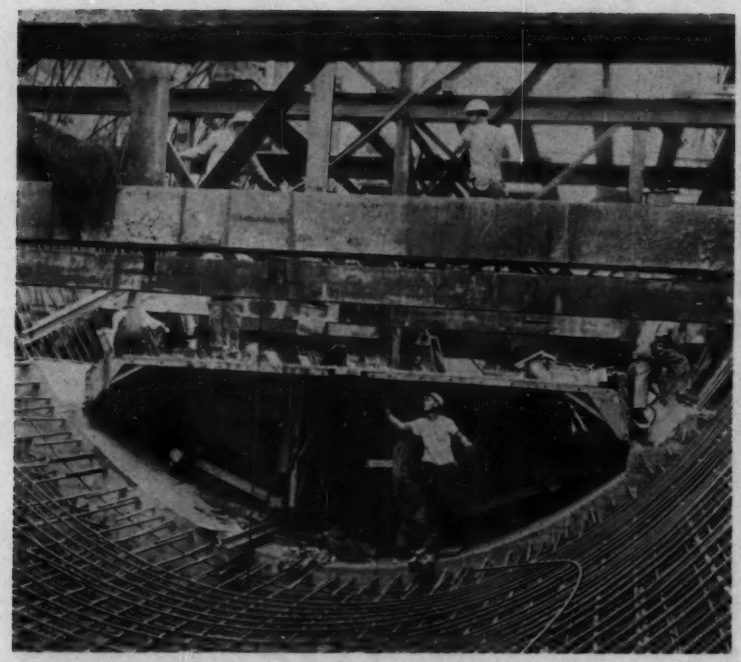
Joint-venture contractors Pomeroy-Bates & Rogers-Gerwick cast each of the 6,000-ton tube sections in three pours. The first is the invert, which includes the lower 120 deg of the 30-in.-thick shell. This requires 810 cu yd of concrete. Next is a 250-yd roadway pour. The third pour, taking 1,580 yd, completes the arch.

Base for each 6,000-ton tube segment is a set of 12x12-in. timber sleepers permanently attached to the drydock's concrete floor. Timber launching cradles are placed on them. These cradles are framed ribs permanently assembled in 10-ft longitudinal sections with ribs on 3¼-ft centers. They extend 10 ft transversely on each side of a center line split. Each rib includes ten 6x8-in. posts and a double 4x14-in. joist fitted to radius.

When the drydock is flooded, the cradle sections float to the surface and are recovered.

The launching cradles also act as support for the center portion of the exterior invert form. This actually is 2x12-in. timber lagging that is specified to protect a tube's

Sections Nets Extra Progress



By HOWARD M. EICHSTAEDT
Assistant to the General Manager
Pomeroy-Bates & Rogers-Gerwick

ROADWAY Steel forms for roadway slabs of the precast sections also are used for pouring cast-in-place portions of tunnel at either end of the sunken-tube part, as shown here. The forms are split along their centerline, and two separate travelers riding on the invert handle each side in 20-ft lengths.

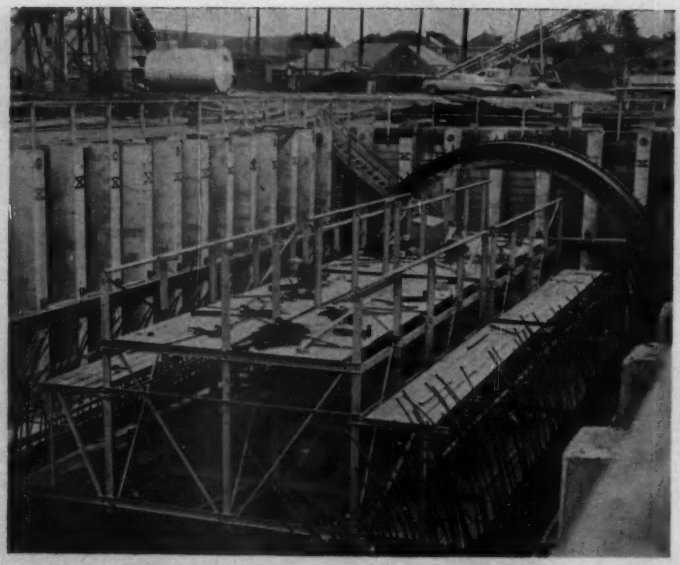
ARCH (BELOW) Form traveler, fitted with jacks and turnbuckle braces, winches itself into position with an air tugger to pick up another 20-ft length of arch form. A removable bridge (foreground) spans the 40-ft opening between the two tube sections that are under construction simultaneously in the drydock.



Special Equipment Overcomes Reinforcing and Concreting Problems



GROUT COVER—A 1-in. layer of grout protects membrane from invert operations. Platforms hung from dock wall will help hold invert reinforcing.



REINFORCING GANTRY—Arch rebars will be held by 30-ft long rig until tied and they become self-supporting.

STEEL SETTING—Outer ring of arch reinforcing is placed after inner gantry is removed and the forms are inset.

TUNNEL TUBES BUILT IN PAIRS . . .

exterior waterproofing from mechanical abrasion and damage.

So, after the lagging is laid on the cradles, it is covered with a membrane waterproofing of three layers of glass fabric and four coatings of hot asphalt. Then, to protect the membrane during subsequent operations on the invert, it is covered with a 1-in. layer of cement grout.

The rest of the exterior invert form is steel. And, because it must be left in place until a complete tube section is cast, two sets are provided. There is only one set of forms each for the invert interior, roadway slab, and tunnel arch. These are moved from one tube to the other in the drydock. Fabricated by Blaw-Knox, the steel forms total more than 600 tons.

Reinforcing steel has presented many special problems for the rebar subcontractor, San Jose Steel Co. For example, circumferential bars that run up to 37 ft in dia must be provided and supported in lengths exceeding a half circle. These bars come in sizes from No. 8 to No. 10, depending on final depth of the tube, and are placed on 12-in. centers. They must be bent at the site within reach of the Manitowoc 3400 portal cranes that serve the drydock. In place, they must be supported in the vertical position. For the invert pour, this is done by special templet catwalks hung from the sides of the drydock.

Inside forms for the invert are set in 20-ft lengths. They are supported by transverse framed trusses on 10-ft centers, with end posts that rest upon the outer forms. They are open for 60 deg in the middle for screeding.

The 810-yd invert pour is made in from 8 to 10 hr. Most concrete is chuted directly from truck mixers. After concrete in the open bottom has set sufficiently, the rest of the invert is poured between inner and outer forms by buckets.

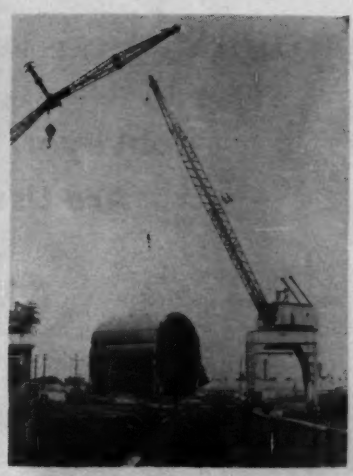
Basic unit for concrete production is a CA 244 Noble automatic batch plant alongside the drydock. It includes storage for 270 tons of aggregate and 2,500 cu ft of bulk cement. And, because state specifications require rescreening prior to batching, the plant includes a Symons finish screen just above the aggregate storage bin. Jaeger 7-yd high-dump truck mixers mounted on Reo chassis handle the mixing.

After the invert is poured, the upper invert forms are stripped and the reinforcing bar templets are removed. Next a longitudinal timber bulkhead is constructed on the invert. Made of 6x8-in. posts sheathed with rough 1x12's, it serves two purposes.

Primarily, it prevents sloshing of water that will be admitted under the roadway slab to ballast the tube for final sinking. But it also supports the centerline of the road slab so that no reshoring is necessary after the pour.

Because of the centerline bulkhead, the travelers for handling the roadway forms must operate on half of the invert. One set of wheels rides a rail near the invert bottom and the others, rubber





ARCH FORM—One of two portal cranes that serve the drydock lowers a 20-ft section of form into opening between tubes.



FORM TRAVELER—Collapsed form section is jockeyed into position atop traveler that will carry it into place for pouring.

tired, roll along the upper invert wall.

The 12-in. roadway slab pour for each tube segment requires 250 cu yd of concrete. After it has cured, the forms are moved by the travelers to the adjacent tube section or are removed from the drydock completely. The longitudinal slosh bulkhead stays in place for reshore purposes.

Biggest pour on each tube is the arch, which includes the upper 80 deg of the tube circumference. Reinforcing bars are set by two 30-ft-long jumbos operating on rails set on 6x12-in. sleepers on top of the roadway slab. After steel is set on one tube section, the traveler is rolled directly across the 40-ft opening into the other tube to set its steel. Then a form gantry is inserted and the inside forms are placed.

The 1,580-yd arch pour takes from 16 to 18 hr. For the lower part of the arch, the truck mixers discharge into chutes that take the concrete to windows in the forms.

Concrete for the upper part of the arch is handled in two ways. A Hewitt-Robins conveyor supported by one of the drydock's two portal cranes takes concrete directly from the truck mixers—two mixers can discharge into its hopper at one time. This is moved along the tube section as needed.

Supplementing the conveyor discharge is a 5-yd Garbro bucket handled by the other portal crane. Also on the job is a 2-yd Garbro bucket on a 25-ton Bay City truck crane. This tops out the tube pour and completes the collars at each end—43x45-ft rectangular sections 9 ft thick.

Key to the huge pour is the combination of windows, chutes, and the conveyor belt. Concrete must always be balanced at nearly the same height in both walls.

Vibration is both internal and external. For the lower section of the arch, operators with Dryer electric vibrators crawl inside the forms—wall thickness is 30-in. and there is about 20 in. between the circumferential steel. They move about as the concrete rises,



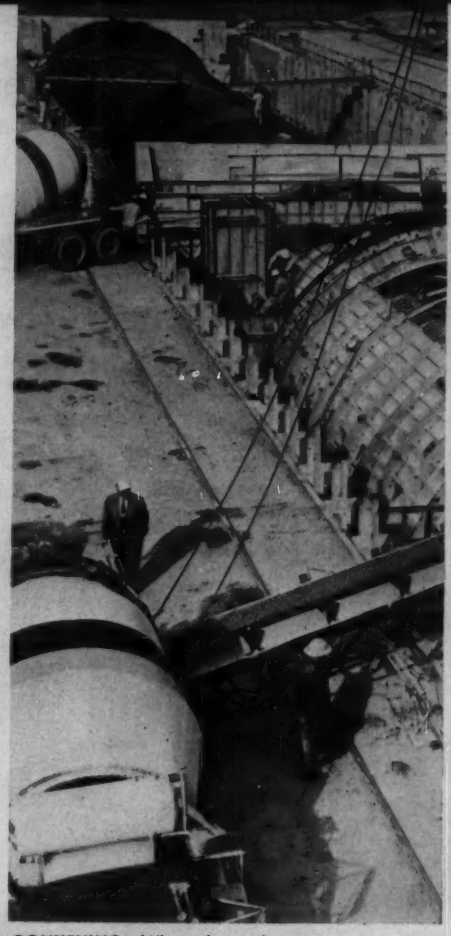
FORM OILING—While portal crane still holds form, workman in a scale box handled by truck crane sprays its surface with oil.

Conveyor, Chutes, and Buckets Are Used to Place Concrete

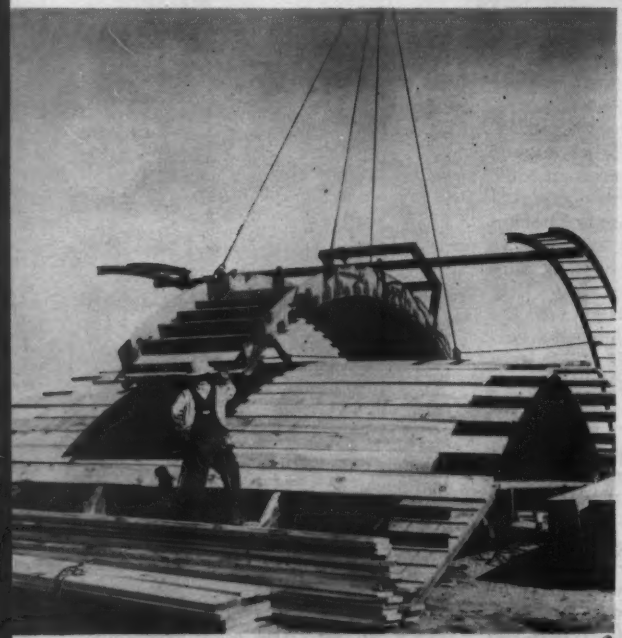




CHUTING—Concrete for the lower part of the arch pour is chuted directly into place by transit-mix trucks (above) through windows in the forms (right). The same catwalk that earlier helped hold invert reinforcing steel now serves as work platform.

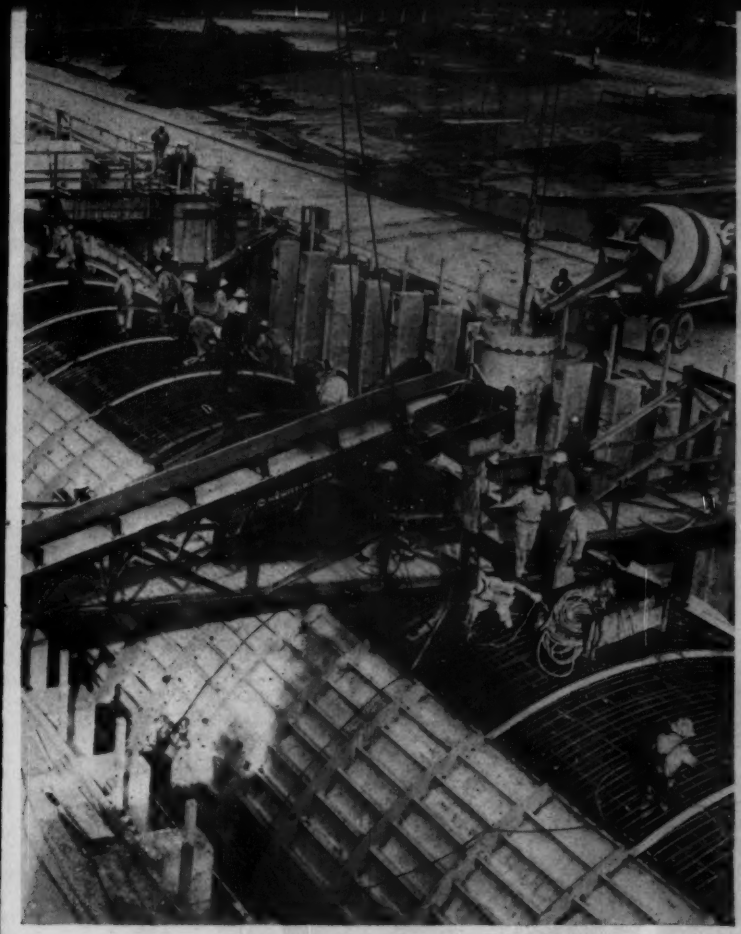


CONVEYING—When the arch concrete approaches the top of the outside forms, mix trucks discharge onto belt conveyor or into crane-handled buckets for placement.





PROTECTING—Timber lagging, preset on curved form, is picked up by crane-handled jig (above) and swung into place (right).





WATERPROOFING—After forms are stripped, exterior of tube is treated with three layers of glass fabric and four coats of roller-applied hot asphalt.

sometimes emerging after 5 or 6 hr of continuous heavy duty vibrator work. Four Viber external vibrators with automatic pneumatic clamps supplement them.

Plastiment admixture in all arch pours retards the set and improves workability of the concrete. Sika ADR air entraining admixture is also used. Some of the tube sections are required to have heavier concrete than others (52 pcf as compared with 147 pcf). A combination of air entraining admixture and Plastiment helps control concrete weight and achieves minimum shrinkage.

After the arch pour is completed, forms are stripped. Outside forms move directly to storage, while the traveler takes inside forms in 20-ft sections to the central opening. Then various interior bulkheads and catwalks are inserted for use when later sinking the tube segments.

Also introduced at this time is sand ballast that is placed directly on the roadway slab for trimming the unit. Most of the other outfitting is done before the tube sections are floated out of the drydock. This includes installation of pumps, bollards, sighting masts, access hatch, and piping.

End bulkheads to make the tubes watertight during the sinking process are built in two stages. Below the roadway level they are reinforced concrete. Above that, steel beams are placed and faced with 6x12-in. timbers that are calked with oakum and calking cement and faced with three layers of felt and asphalt.

The entire bulkhead is then coated with a 1-in. layer of Gunite and protected by horizontal 12x12-in. timber fenders.

Final step in drydock is to place the rest of the waterproofing membrane and its protective lagging. Special rollers were developed to handle asphalt application on the sides below the springline where access is difficult.

A special jig is used to place the 2x2-in. lagging on the sides and top of the tube. In the work yard, lagging is laid out on a form shaped to tube-wall curvature. A steel jig, also curved, is laid on top of the lagging and toe-nailed to it through metal nailing strips. This permits the moving of complete lagging assemblies to the tube as a unit.

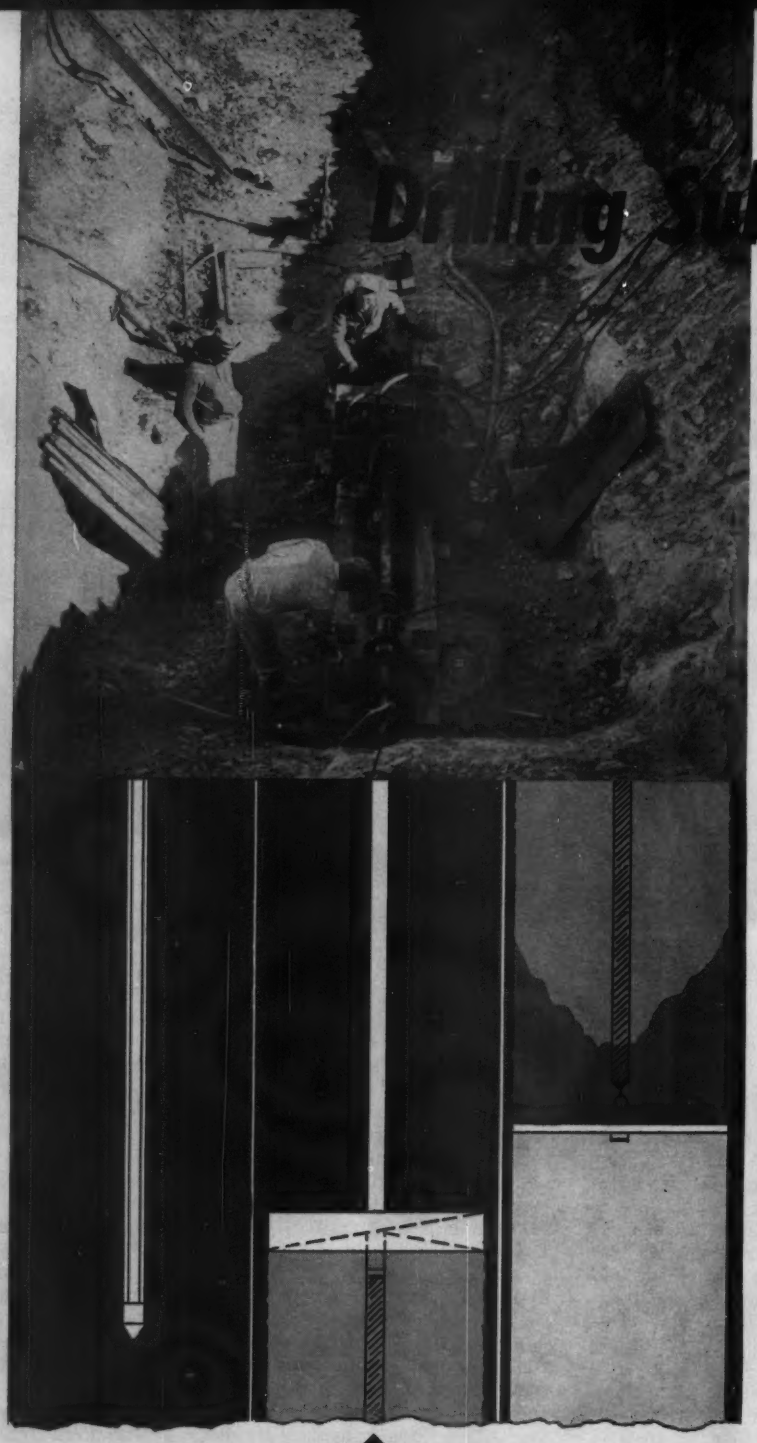
The jigs remain until 1½-in.-dia circumferential rods that hold the lagging in place are affixed. Then the toenails are pulled and the jigs removed for reuse.

When two tube units are completed, the drydock is flooded through a pair of 18-in. square Armco gates set in the dock gate. As the units float free, the cradles supporting the central part of the invert are removed. The drydock gate is hoisted out by a floating crane. This crane also pulls the tube sections clear of the drydock —the collar sections have only 2 ft of clearance on each side. Then tugs haul the units to the placing site some 2 mi away.

The joint venture constructing the Webster St. Tube is made up of J. H. Pomeroy & Co., Inc., Bates & Rogers Construction Co., and Ben C. Gerwick, Inc. Walter O'Farrell is general manager for the joint venture.

Rudy Buhlman is general superintendent, Earle Mickle is casting yard superintendent, and Del Pedgrift is project engineer. George A. Greene is resident engineer for the California Div. of Highways.

Drilling Jobs for



1. Hydraulic drill rig bores 3-in. pilot hole from a construction pit to a vertical shaft in the pumping station. Accurate line and grade must be maintained during this important step.

2. Drill stem with open-type, water-lubricated reamer enlarges the hole to 32 in. and pulls a cable into position at the same time. The cuttings are mixed with water and remain in hole.

3. After the hole is enlarged, a circular plate is attached to the cable and is pulled through the hole by a truck winch, removing the cuttings and dumping them in construction pit.

Cut-and-Cover Excavation

To avoid excavation at a reservoir project, the contractor drilled three vertical holes for pumping station shafts. A subcontractor then bored a 32-in., 110-ft horizontal hole and jacked pipe into place for a water intake.

A COMBINATION of vertical and horizontal shafts placed by specially designed drill rigs eliminated the need for cut-and-cover work during the construction of a pumping station and water intake for a reservoir near Nocona, Tex. As a result, the job was completed ahead of schedule and at savings of $50,000.

At first the engineers, Freese, Nichols & Endress of Fort Worth, considered building the pumping station structure in the reservoir, with a bridge for access. They also thought about building a conduit to supply water to the pumping station, which would be located on high ground.

But investigations showed that drilling a series of shafts for the pumping station structure and boring a horizontal hole for the intake pipe would cost about $50,000 less than the other two schemes. And the site would not be obstructed by an open excavation during construction.

Gilvin-Terrill, Inc., of Amarillo, Tex., general contractor on the project, took care of the vertical drilling with a special rig built to its own specifications. Horizontal boring was subcontracted to the Texas Tunneling Co. of Houston, a division of the Boring and Tunneling Co. of America.

The pumping station consists of three 45-ft-deep shafts covered with an 8-in.-thick concrete slab that supports the pumps. Another 43-ft shaft serves as a standpipe for measuring the water level in the reservoir.

The three shafts are interconnected with 18-in. pipes and are served by a single 24-in. supply pipe from an intake structure in the reservoir. A separate 3-in. wrought iron pipe serves the standpipe shaft.

Rig Drills 110-ft Horizontal Shaft

The intake pipe is about 110 ft long. It was pulled into place after a horizontal hole was drilled from a construction pit in the reservoir.

BorTunCo's main piece of equipment for drilling the horizontal shaft was a hydraulic boring rig designed and built by Osborn Machine Co., Inc., of Houston. With this rig, the contractor first drilled a 3-in. pilot hole to establish correct line and grade.

When this was completed, the leading end of the drill stem was fitted with a water-lubricated, reverse-cutting, open-type reamer that enlarged the hole to a diameter of 32 in. A steel cable also was attached to the drill stem by a swivel.

Then the cutter was drawn back from the pumping station toward the drill rig to enlarge the hole. The cuttings were mixed with water to form a thick mud slurry that remained in place and completely filled the hole. The steel cable, pulled through the slurry by the reamer, also remained in the hole.

When the reaming operation was completed, the cable was disconnected from the drill and the rig was moved out of the construction pit.

To remove the cuttings, the contractor attached a 32-in.-dia steel plate to the cable at the pumping station end. The other end of the cable was hooked to a winch truck that pulled the plate through the hole, dumping the cuttings into the construction pit. Then BorTunCo pulled 24-in.-ID reinforced concrete pipe into the hole and grouted it in place with a Mayo pressure grouter to complete the intake.

It took less than two weeks to complete the horizontal drilling in spite of a few delays caused by the large diameter of the hole and by soil conditions along the line of the intake. Shale in the area is too hard for BorTunCo's standard drill rigs which are designed primarily for boring through soft ground.

The reamer consists of three radial cutting blades spaced at 120 deg. To cut through shale, three additional blades were added and all six blades were fitted with Carboloy tips.

Extra blades and the hard shale put a strain on the unit's power plant. Normally this is a 7½-hp air motor driven by a 250-cfm compressor. After drilling the pilot hole with this equipment, BorTunCo brought in a 48-hp hydraulic power unit to drive the modified reamer.

Auger Drills Vertical Shafts

The 3-in. hole leading to the standpipe at the pumping station was drilled in the same way as the pilot hole for the intake pipe. When the hole was completed, wrought iron pipe was jacked into place and connected to the standpipe shaft.

An auger-type drill rig, built by Hugh B. Williams Mfg. Co. of Dallas, handled the vertical drilling. The rig, mounted on a Model 6 Northwest crawler crane, was powered by its own engine.

Drilled diameter of the three shafts is 48 in. and finished diameter of the reinforced concrete pipe liners is 36 in. About 2 in. of grout around the outside of the liners complete the shafts.

The facilities under construction are part of Farmers Creek Dam, a project that will supply raw water for the North Montague County Water Supply District. A filtration plant also is under construction.

In charge of the Farmers Creek Dam project for Freese, Nichols & Endress was W. L. Eeds. John Sneed, Dallas Div. manager of Texas Tunneling Co., directed the horizontal boring operations for BorTunCo.; Bill Rives was job superintendent.



Techniques on Similar Dam Projects Vary To Meet Local Conditions

These two Corps of Engineers' dam projects in the Arkansas River Basin near Tulsa, Okla., are similar in size, basic design, total cost, and location. The equipment employed by the two contractors handling the project also is almost identical. But at this point, the similarity between the jobs comes to an end.

"No Two Jobs Are Ever Alike . . ."

As if to prove the truth of the old industry adage that no two construction jobs are ever alike, the contractors working on almost identical dams near Tulsa, Okla., differ in the way they produce sand and aggregates and place concrete.

AT KEYSTONE DAM, on the Arkansas River about 20 mi west of Tulsa, the contractor buys coarse aggregates from a commercial producer who ships them in by rail. A subcontractor reclaims coarse sand from the river about 3 mi downstream from the job site and fine sand is excavated from wind-blown deposits about 1 mi from the dam. Sand is graded and blended and then hauled to the job as a finished product.

AT EUFAULA DAM, on the Canadian River about 70 mi southeast of Tulsa, coarse aggregates and sand are produced by the contractor. Sand is excavated from the spillway area and stored at an on-site stockpile. Processing takes place at the job.

Specifications for spillway concrete for both dams are practically identical, and so are the contractors' concrete plants and forms. But plant location, hauling methods, and placement techniques differ—and so does production.

For a comparison of the essential differences on what at first glance appear to be similar projects, turn the page.

KEYSTONE DAM (LEFT)

Sand: Hauled to job as finished product.
Aggregates: None at job; shipped by rail.
Water: From spillway by wellpoints.
Concrete: Plant turns out 770,000 yd.
Plant location: 200 ft. from spillway.
Concrete handling: By trucks to gantries.

EUFAULA DAM (BELOW)

Sand: Processed by contractor at the job.
Aggregates: Produced at the job site.
Water: Supplied from river by wellpoints.
Concrete: Plant turns out 580,000 yd.
Plant location: At end of spillway.
Concrete handling: By rail to gantries.



CONCRETE PRODUCTION





EUFAULA—Aggregate cooling plant is at edge of spillway excavation. Concrete plant (foreground) is in cut at one end of spillway. Plant discharges into 4-yd buckets that are hauled to gantries by rail cars that run on tracks set along the spillway.

THE SPILLWAY DESIGN of two Corps of Engineers' dams now under construction near Tulsa is practically identical. So are the contractors' high-capacity, automatic concrete plants, and so are the forms.

But faster concrete handling and placement have combined to give one contractor an important 10 to 20-yph production edge. The methods used by the contractors in handling these variable factors are not ones of choice, but of location and job conditions.

At Keystone Dam, Hyde Construction Co., Inc. of Jackson, Miss., had to set up its automatic concrete plant 200 ft from the nearest end of the spillway. Concrete is hauled in 4-yd GarBro buckets by especially equipped Euclid 36T's with low-bed trailers.

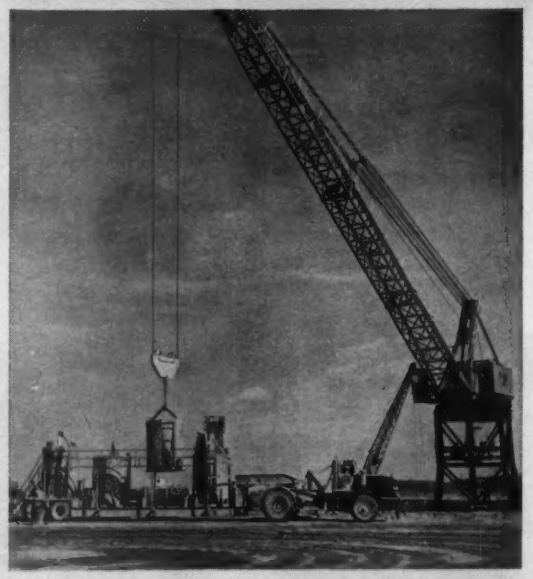
At Eufaula Dam, the contractor was able to set up his concrete plant right at the end of the spillway. The joint-venture of Tecon Corp., Green Construction Co., and Winston Bros. Co., uses rail cars to carry 4-yd GarBro buckets to the pour area.

Like Hyde, the joint venture has a C. S. Johnson concrete plant with three 4-yd drums. Both contractors are using similar forms built by Dixie Form and Steel Co. of San Antonio, Tex.

Production at Keystone averages 180 to 190 yph. At Eufaula, the average has been closer to 200 yph.

Both contractors have two American gantry cranes on their jobs to place concrete. At Keystone, the gantries must swing 180 deg to reach the Eucs, but at Eufaula the gantries swing only 90 deg to unload rail cars. The smaller swing angle at Eufaula has shortened cycle time and increased production.

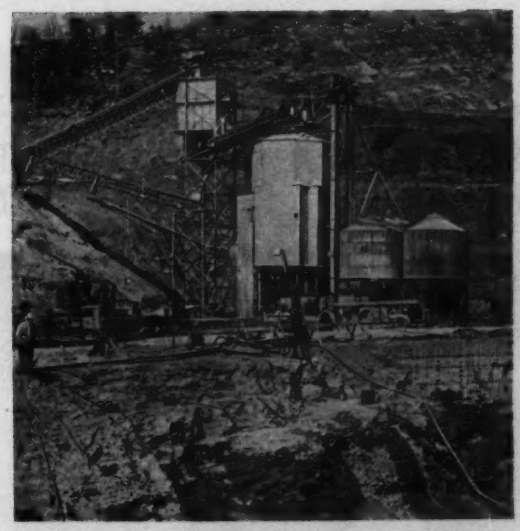
Another difference in concreting at the two dams shows up in the pattern of the pours. At Keystone,

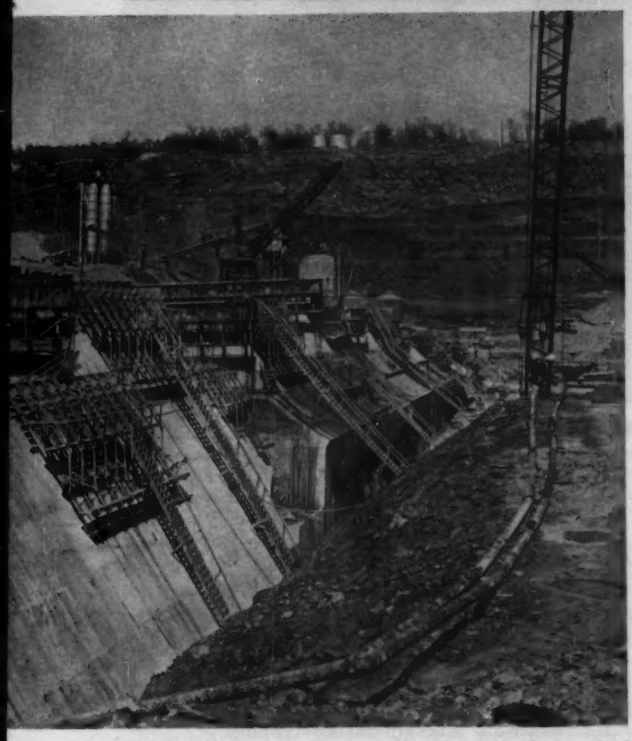


KEYSTONE—Concrete is placed in pyramid pattern starting at one end of spillway. Each adjacent pour is one lift behind the preceding pour. Two American gantries (top photo) handle concreting. Euclid 36T's (bottom photo) haul concrete buckets.

Hyde follows a pyramid or step-type pattern in which one end of the spillway is poured all the way to the top while each adjacent 48-ft-wide pour is one lift lower. At Eufaula the spillway is concreted along its entire length, but each lift includes only every other pour; alternate pours are completed in a subsequent lift. Both contractors are pouring concrete in 7½-ft lifts.

At both dams, cranes as well as gantries are needed to place concrete, because gantries can't reach some downstream portions of the spillway and the stilling basins. Hyde Construction Co., is





EUFAULA—Concrete plant (top photo) is located at end of spillway to keep hauling distances to minimum. Plant discharges into rail cars that deliver concrete along spillway to gantry (bottom photo.) The spillway is poured in a staggered pattern.

using a Lima crawler crane, and Tecon-Green-Winston uses a Manitowoc crawler crane for placing concrete in these areas. Euc 36T's with low-beds haul concrete buckets to these spots at both dams.

Wellpoints Supply Clean Water

Large quantities of water are needed during aggregate and concrete production and curing at both dams. This had been a problem at both jobs, until the contractors hit upon a scheme to overcome it.

The water in both rivers near the jobs contains dissolved minerals that make it unfit for use without extensive and expensive purification. So contractors at both dams are reclaiming water removed by the wellpoint systems that dewater the spillway excavations.

At Keystone, the system installed by the Independent Wellpoint Corp. of Baton Rouge discharges water into a storage lagoon. The system easily supplies enough water to meet all demands.

But there is not as much ground water at the Eufaula dam site. The Stang wellpoint system installed here by the Subgrade Engineering Corp. of Bell, Calif., performed its primary function of keeping the excavation dry, but it did not deliver enough water to meet the contractor's needs. So they installed additional wellpoints on the stream side of the cofferdam that protects the excavation along the river. Now, the job has plenty of water that has been filtered by the river bed. It is stored in a pit on one side of the spillway excavation.

Another basic difference in the two projects centers around the availability of aggregates and sand. At Keystone Dam, aggregates simply are not available at the site and Hyde must buy coarse material from a commercial producer.

Sand is produced by a subcontractor about 3 mi downstream from the dam. Coarse sand is reclaimed from the river and fine sand is excavated from wind-blown deposits about a mile from the dam. Sand is graded and blended and then hauled to the dam as a finished product.

At Eufaula Dam, coarse aggregates and sand are produced by Tecon-Green-Winston.

For coarse aggregates, the Corps of Engineers, sponsor for both dams, furnished a quarry 8½ mi from the dam, and the contractor supplied the crushing and screening equipment. The contractor also built a bridge to connect the quarry haul road to on-site stockpiles.

Sand is plentiful at this dam site. It was excavated from the spillway area, stored in an on-site stockpile, and graded and blended at the dam.

Plenty of Sand at Keystone

The stream bed yields plenty of sand for the Keystone Dam project, but a complex system of screening and classifying is necessary to turn it into a usable product.

Traxler Gravel Co. of Utica, Miss., pumps sand from the river and runs it through a plant set up on the bank to obtain usable material.

Pumps mounted on rafts in the river deliver a sand and water mixture to a scalping screen that separates sand from clay, debris, and other dirt. Usable material then passes through a No. 10 stainless steel slotted screen where it is separated into two grades. Minus 10 material goes through an Eagle classifier for additional gage control and for removal of fines. This control is necessary to make the gradation suitable for proper blending.

After passing through the classifier, usable sand is stockpiled by a conveyor belt. Another conveyor from the No. 10 screen stockpiles the coarser No. 16 to No. 50 material.

The stockpiled sand then is ready for blending to obtain the final product. Crawler-mounted Insley clamshells charge the two grades of sand into two compartments of a three-compartment bin. The third compartment is charged by dump trucks that bring in fine sand from wind-blown deposits.

continued on next page

← SAND PRODUCTION





KEYSTONE—Barge in river supplies most of the sand needed. Screening, classifying, and mixing equipment (bottom photo) is set up on river bank by subcontractor who delivers finished product to site. Fine sand comes from wind-blown deposits.

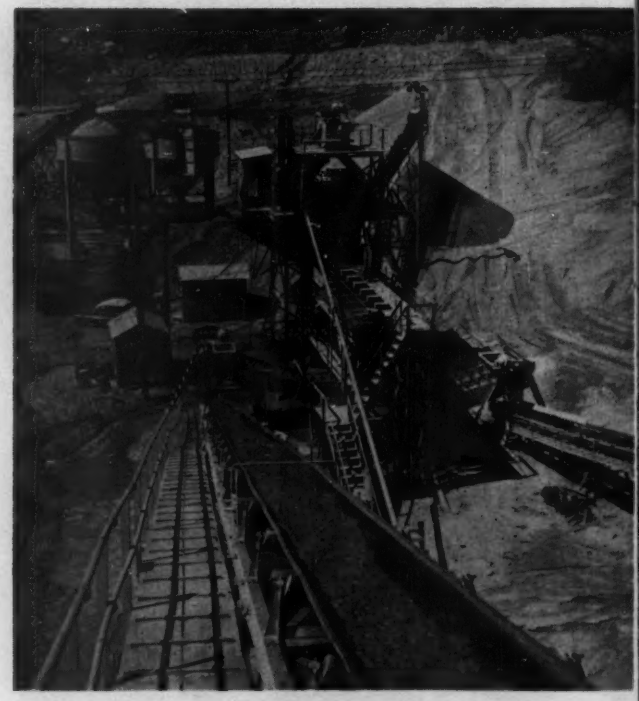
From the bins, correct quantities of the three grades of sand are dumped onto a conveyor belt that feeds a pug mill. The blended product is discharged on another belt that loads directly into dump trucks for hauling to an on-site stockpile. About 350,000 tons of sand will be needed to complete the dam.

At Eufaula Dam, sand must meet the same specifications but the production method is simpler because the sand is at the site. It was removed from the spillway area during excavation and stored nearby.

During excavation the sand was classified roughly by eye; coarse sand was dumped in one pile and fine sand in another. This was done to simplify later mixing and blending because there is an excess of coarse material. For blending, the material is taken from the two piles and dumped into a wet-type classifier for final grading and removal of excess coarse materials.

The classifier delivers three grades of sand. Coarse sand (⅜-in. and larger) is stockpiled for other uses. Two grades of fine sand are stockpiled for concrete. The two fine grades are blended in proper proportions just before final use in preparing the concrete mix.

AGGREGATE PRODUCTION →



EUFAULA—Processing equipment includes sand charging bins, wet-type classifier, and mixing rigs. During excavation of spillway area, sand was graded by eye into two piles. From these, sand is blended for the concrete that is used in spillway.

Aggregate Production at Keystone

Coarse aggregates are not available at the Keystone site. Hyde Construction Co. gets material by rail from a commercial producer about 25 mi away.

Four grades of coarse aggregates—6, 3, 1½ and ¾ in.—are unloaded from rail cars and stockpiled py a radial stacker. The stacker and other handling equipment were built by Barber-Greene.

From stockpiles, materials are blended in proper proportions and rinsed before passing on to the cooling plant. Rinsing removes excessive fines produced during shipping and handling and thoroughly wets the materials for cooling by evaporation.

The vacuum-type cooling system, designed by C. S. Johnson, incorporates two Cleaver-Brooks packaged steam boilers, three bins for coarse aggregate cooling, and two bins for sand. The three aggregate bins work in cycles: while one is being charged, the second is cooling, and the third one contains cooled aggregates. They are cooled to obtain a 40 to 50-deg concrete temperature.

After passing through the cooling plant, the aggregates again are separated by size so that proper quantities of each can be weighed out for mixing concrete.





KEYSTONE (TOP)—Aggregate that is brought in by commercial producer is delivered by rail cars and dumped on stockpiles near the job by radial stacker. At the site, aggregate is washed to remove excess fines produced during handling and shipping.

EUFAULA (BOTTOM)—The contractor produces his own aggregates at a quarry near the job. Equipment here includes three crushers. The two fine grades needed (1½ and ¾-in.) are graded at the site before being used in the concrete mix.

Aggregate Production at Eufaula

Aggregate production at Eufaula Dam is more of a chore because the contractor must take care of it himself at a quarry furnished by the Corps of Engineers. The quarry and crushing plant are on the south side of the river, 8½ mi from the dam, and the spillway is on the other side. By existing roads, the quarry to dam distance is about 28 mi; to reduce it, Tecon-Green-Winston built a temporary bridge near the dam.

Practically all equipment at the crushing plant is built by Cedarapids. The primary crusher is an N-68 Impactor. Material goes from here to a scalper that separates it into plus 7 and minus 6-in. sizes. The oversize fraction goes back to the secondary crusher, a Cedarapids 3020 Impactor.

The product then passes through screens that separate it into three grades. The 6-in. material is dumped on one stockpile and 1½ and ¾-in. grades are dumped together on another pile. Further separation of the small sizes takes place at the concrete plant. This reduces the amount of wasted fines.

Because of an excessive amount of 3 to 6-in. material, this fraction is dumped into a third crusher that produces 3-in. and smaller sizes. At first, the contractor tried a roll crusher for this operation but it produced too many fines. Later, a Telsmith cone crusher was substituted. All conveying equipment at the quarry is built by Cedarapids.

Dump trucks haul aggregates to on-site stockpiles. Then materials are blended and cooled in a vaccum cooling plant installed by Willamette Iron & Steel Co. of Portland, Ore.

Men on the Jobs

The Corps of Engineers activities are under the direction of the Tulsa Engineer District. Personnel at Keystone Dam includes Roy M. Cami, resident engineer; Robert D. Patterson, assistant resident engineer; William C. Nance, materials engineer; and John C. Maples, construction engineer.

For Hyde Construction Co., Harry Taylor is project manager, P. F. Fraizier is project engineer, and Jim Upton is superintendent.

Resident engineer at Eufaula is W. L. Boland and his assistant is Charles W. Surbey. Materials engineer is Ralph Hoss.

Tecon-Green-Winston project manager at Eufaula is James E. Dunn. Project engineer is James McEwen; general superintendent is Fred Brandt.

Union Wire Rope

Tough-job "champs"--Union Wire Ropes and Slings



"Real Gone" from Beatings on the Drum

Even under normal operating conditions, drum wear gives wire rope severe punishment. This wear concentrates at the cross-over points and at the flange. Excessive drum crushing results from operating on small drums, excessive loading and poor winding. Smooth drums are not recommended. Here are typical "drum beatings"; cross-over wear; cross-over crushing on drum; drum crushing from poor winding; drum-crushing from small drum.

Although drum wear cannot be eliminated, its effects can be greatly reduced. Under properly engineered procedures, two and three times the service can be obtained from the same line by improving drum conditions. Union Wire Rope Engineers will help you with this problem.





On the "Blink" from a Kink

This open kink resulted from mishandling of rope. Guard against kinks by proper winding on the drum. Never pull a loop smaller. Always enlarge it, then straighten out the rope.

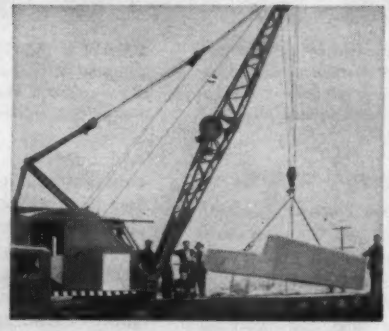
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Tuffy Scraper Rope

Flexible enough to take sharp bends; stiff enough to resist looping and kinking when slack; highly resistant to the shock of load impact—that's Tuffy balanced construction. Mount a reel on your scraper—save wasting sound rope.





Tuffy Slings and Hoist Lines

Slings are a patented, 9-part machine-braided wire fabric that is next to impossible to knot or kink. Hoist lines have built-in strength, toughness, flexibility. Balanced—a top-performing team for handling every type of material. In addition to Tuffy, Union Wire Rope furnishes a complete line of slings.





Tuffy Dozer Rope

Mounts right on your dozer in a 150′ reel. When rope shows wear, just feed through enough to replace the damaged part. Saves rope, gives you a bonus of extra service. Also available in 300′ and 500′ reels.



Look to the Union Wire Rope Organization for "Right Rope" Service. Union has more than 1600 standard constructions, *plus* the special Tuffy family of wire ropes and slings tailored to exacting special needs. For many years people with special wire rope needs have been coming to Union for help. That's the way the Tuffy family grows. Our research laboratory is at your service. If we don't already have it, we'll design and fabricate just the rope or sling you need. And you'll be sure of Union strength, Union flexibility, Union job-tested quality. Call your Union distributor—see the phone book Yellow Pages.

Tuffy Tips

New steels are born at Armco

keep the title longer with proper handling.



Burned on a Frozen Sheave

End of the line came quickly for this rope as the result of operating over a sheave that did not turn. Note the exceptionally heavy abrasion on one side of the rope. Sheaves should be checked thoroughly and often.



How to Measure Rope Diameter

To get the most service, efficiency and safety out of wire rope operation, rope and sheaves must be precisely fitted to each other. There's only one right way to measure rope diameter: use machinist's calipers and be sure to measure the *widest diameter.*

A slight shift of the rope in the calipers, as shown above, will give you a misreading which would result in ordering an undersize rope. Note that the measurement at right shows 1/8" under correct diameter. Be sure to double-check every time!



Tuffy Dragline Rope

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Union Wire Rope Handbook of TUFFY TIPS... Free!

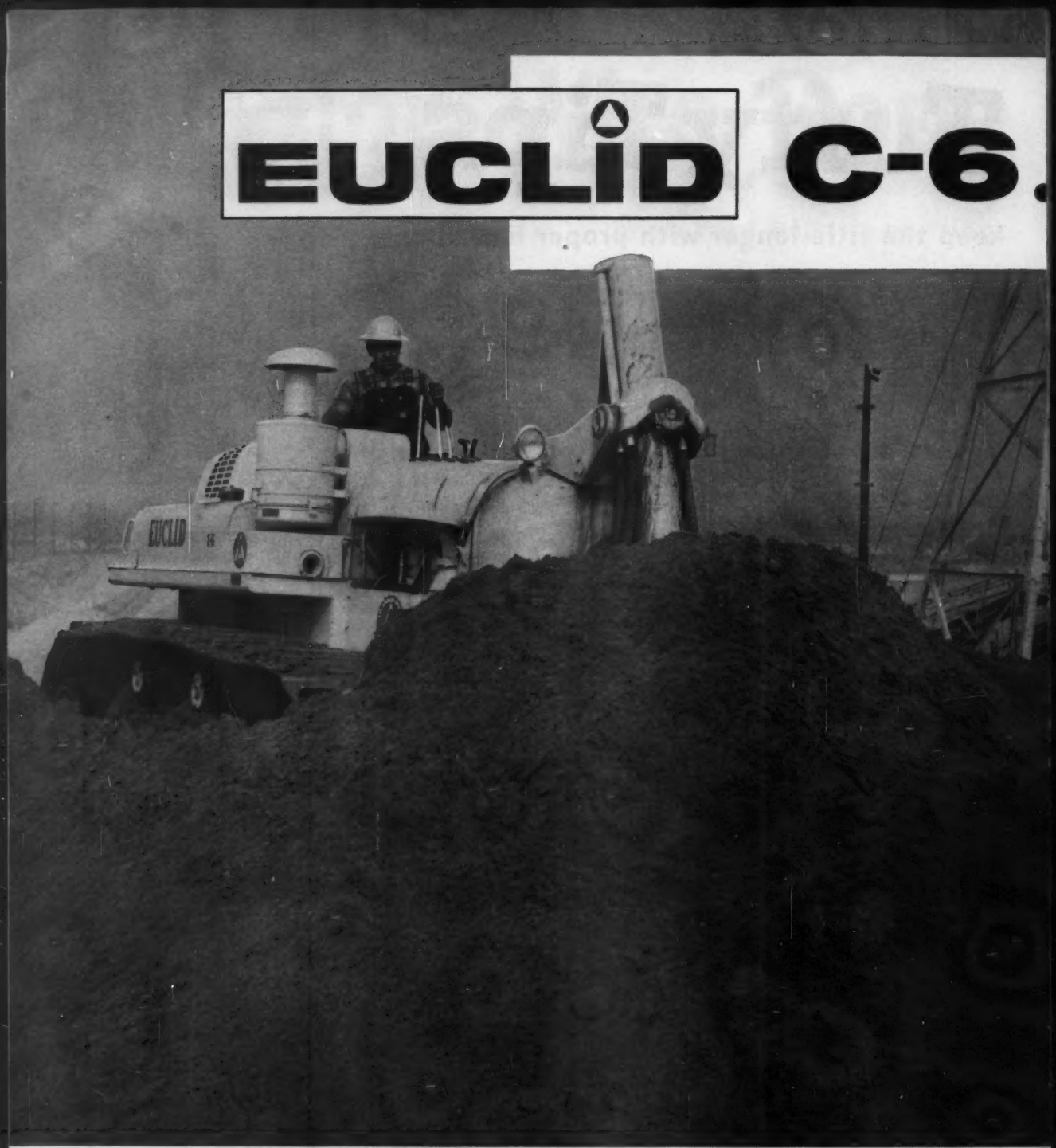
The "Tuffy Tips" shown here are quoted right out of Union's handbook. In it there are dozens of other priceless hints on the correct use of wire rope. The common abuses and how to avoid them. How to save costly injuries. Maintenance tips. The proper fittings and how to apply them. Recommended sizes. Many other facts and suggestions that will cut down your rope costs and help you get out of wire rope the full service we build into it. No charge. Write Union Wire Rope, Armco Steel Corporation, 2270 Manchester Ave., Kansas City 26, Missouri.



2-61

ARMCO Union Wire Rope

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Euclid and Gar Wood engineers combined their years of hydraulic experience with construction equipment and have developed a system that puts the C-6 even further ahead of other dozers in the same class. Incorporating a variable volume pump and single hydraulic cylinder, the C-6 with hydraulic blade provides important advantages in operation and maintenance ... advantages that are further proof of the C-6 being the lowest cost tractor in the 200 h.p. class, and most versatile by far!

COMPARE THESE FEATURES OF A "EUC" C-6 HYDRAULIC DOZER WITH YOUR PRESENT EQUIPMENT!

- **Fast blade speed—up or down ...** almost twice as fast as competitive units
- **More horsepower for tractive effort ...** operator "meters" pump volume—no wasted engine power because no oil is pumped in "hold" position.
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- **Greater lifting capacity ...** improved mechanical advantage of single lever arm—blade mounting closer to center of front track roller
- **Less downtime ...** only one cylinder—no high pressure on drive shaft seal—heat problem eliminated—pump works only when pressure is needed for raising or lowering blade

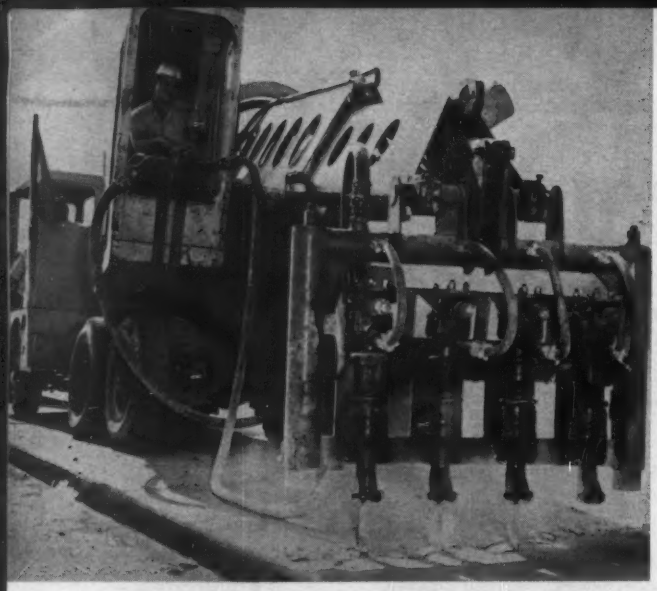


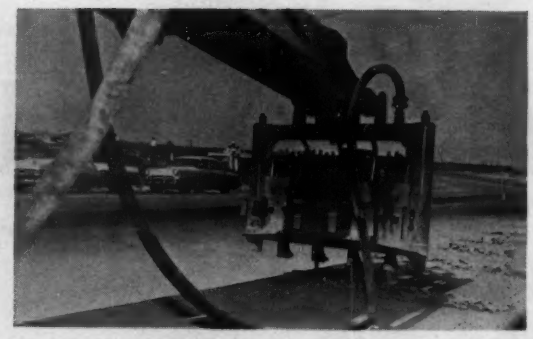
GM GENERAL MOTORS EUCLID

EUCLID

DIVISION OF GENERAL MOTORS, HUDSON, OHIO

Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland





SIMPLE ATTACHMENT—Pipe frame in place of a Gradall bucket holds pavement breakers for demolition work. A 2-in. hose supplies compressed air to the attachment which is controlled as a single unit. To take one pavement breaker out of operation, the steel is removed and a clamp is taken off the tool's trigger; the remaining breakers then work as a unit.

Attachment on Excavator Holds Four Pavement Breakers

One man replaces a crew of twelve and speeds demolition work on a Texas road-widening job.

GANG-MOUNTED pavement breakers operated by one man are doing a job previously handled by 12 men with individual tools.

The one-man unit is a Gradall equipped with four Thor pavement breakers that are controlled from the cab and work as a single unit.

The rig is breaking up pavements and structures as part of a road-widening job in Dallas, Texas. Texas Bitulithic Co. of Dallas is the contractor. Its project manager, J. T. Smith, designed the pavement breaker attachment and it was built in the contractor's shop.

The Gradall is especially useful for demolishing walls and overhead structures because it eliminates scaffolding. The existing road carries about 54,000 cars daily, and scaffolding for demolition work at intersections or overpasses would obstruct the roadway.

Texas Bitulithic figures that without this rig, overhead demolition could be done only at night when traffic is light. This means that scaffolding would have to be put up and taken down every night. Allowing 2 hr for erection and 1 hr for dismantling the scaffolds, production would be held to a minimum. But the Gradall simply moves into position, towing an air compressor behind it, and starts work. When the Gradall is needed for other jobs, the demolition attachment is disconnected easily by removing one pin and detaching the air hose.

The attachment is 34 in. high and 53 in. wide. It consists of a tubular frame and a steel mounting plate that holds the pavement breakers. The assembly is equipped with a bracket and hinge similar to those on a Gradall bucket.

The tubular frame serves a double purpose—its horizontal member is a 4-in. pipe that acts as an air manifold. One 2-in. hose supplies air to the pipe, and four 1¼-in. hoses deliver air from the pipe to the pavement breakers.

Vertical 5-in.-dia pipes at each side of the unit support the mounting plate and act as shock absorbers.

Each vertical pipe contains a 4-in.-dia piston and a spring. A rod inside the spring is attached to the piston and extends through the top of the 5-in. pipe. Two nuts at the end of the rod keep the piston from falling out of the pipe, yet allow it to move up when downward pressure is applied by the Gradall's boom.

The mounting plate that holds the paving breakers is attached to the pistons. It moves vertically in ¾-in.-wide slots cut in the outside pipes. When the operator applies pressure on the paving breakers, the springs inside the pipes compress and the rods protrude above the pipes. This gives the operator a visual check on the amount of pressure he is applying. If the pressure becomes too great, the paving breakers stop working.

Each paving breaker is attached to the mounting plate with U-bolts. Two horizontal U-bolts hold the tool to the plate, and two vertical U-bolts hold the handle of each pavement breaker to a bracket above the tool.

Controls are simple. The operator manipulates the demolition rig just as he would any other Gradall attachment. A control valve in the cab regulates the air supply to the entire unit. Individual paving breakers are controlled by clamps that hold down the triggers.

Texas Bitulithic estimates that materials and labor, excluding the pavement breakers and compressor, cost about $1,500. No modifications were necessary to the tools or the Gradall. The compressor, a 365-cfm rotary unit, was equipped with an automatic oiler on the air outlet that lubricate the tools.



One of Southern California's largest home developments, Eastgate, assures low-cost, efficient water service for its 2250 homeowners with "K&M" Asbestos-Cement Pressure Pipe.

22 MILES OF "K&M" ASBESTOS-CEMENT PRESSURE PIPE ASSURE

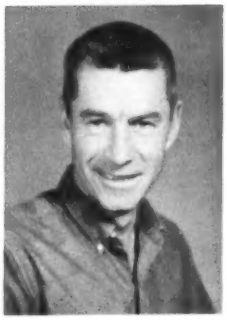
dependable water service for a spanking new city of 10,000!



Modern cities like Eastgate spring full-grown from the earth—complete with homes, schools, shopping center and even a hospital. To make such a city a reality calls for modern methods and modern materials, such as "K&M" Asbestos-Cement Pressure Pipe. This rugged pipe was the builder's choice for its freedom from maintenance and for its durability. He knows today's particular home buyers demand materials that function without failure for years and years. Another important factor was the ease of installation and handling "K&M" Asbestos-Cement Pressure Pipe offers. Robert Kennedy, of Kennedy Pipe & Supply Company, tells you, in his own words, how "K&M" Asbestos-Cement Pressure Pipe helped him adhere to a tight schedule.

"THE 'K&M' FLUID-TITE® COUPLING HELPED US LAY MORE PIPE PER HOUR!"

"We had no trouble keeping up with the builder's tight schedule with 'K&M' Asbestos-Cement Pressure Pipe and the 'K&M' FLUID-TITE Coupling. All we had to do was lubricate the pipe end, and slide it into the coupling. This gave us a joint tight under all operating conditions. We didn't need any heavy machinery or coupling pullers. 'K&M' Pipe was lightweight and easy to handle, which permitted us to work smoothly. It reduced our installation time and costs considerably."



Robert Kennedy, President, Kennedy Pipe & Supply Company, Paramount, Calif.

After it's in the ground, "K&M" Asbestos-Cement Pressure Pipe is practically indestructible. It won't tuberculate. This assures the taxpayer of the same water flow and pressure years later, that he had when his home was new. Pumping costs remain low. Joints stay watertight. In addition, this pipe resists corrosion, and is immune to electrolysis.

For more information write to: Keasbey & Mattison Co., Ambler, Pa.

K·M BEST IN ASBESTOS

Keasbey & Mattison at Ambler

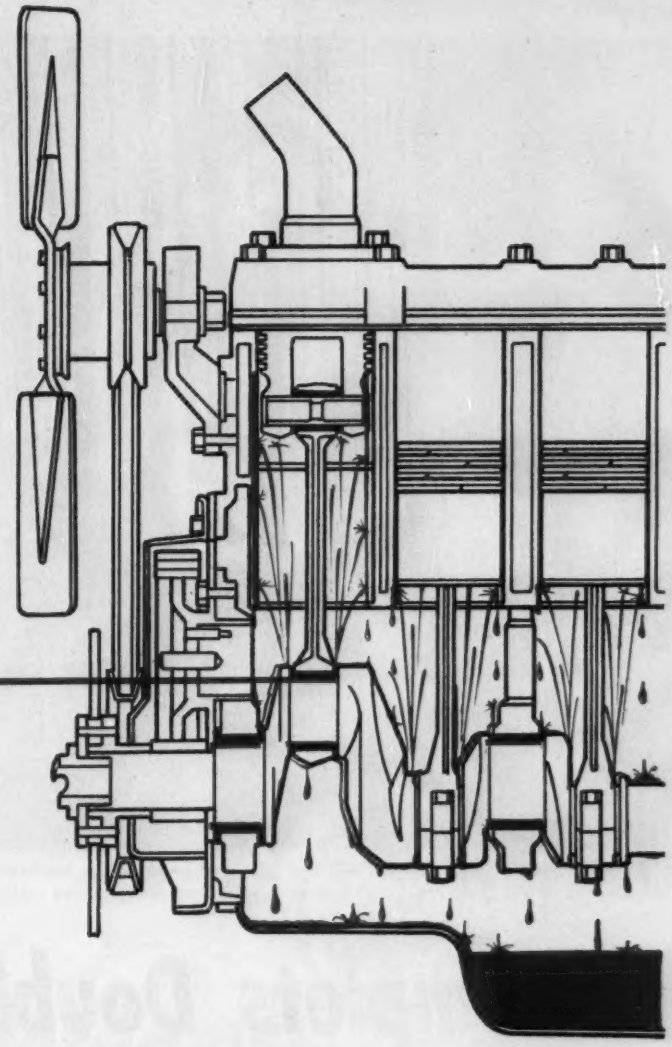
The light weight of "K&M"® Asbestos-Cement Pressure Pipe permits you to lay most sizes by hand . . . and reduces shipping costs.



Assembling the exclusive, patented "K&M" FLUID-TITE® Coupling and Pipe takes but an instant.



Why precision bearings are vital here



Engine bearings have *two* vital jobs. They provide a low-friction surface for journals to ride on. But equally important, they control the oil throw-off, due to the spinning action of the shaft, that lubricates and cools cylinder walls and other engine parts.

Exact tolerances are needed in engine bearings and shaft diameters to get the kind of precise "clearances" needed to control oil throw-off. *Too little clearance*—an error of less than .001″—may result in an overheated bearing and early bearing failure due to insufficient lubrication.

Too much oil clearance is equally harmful to proper engine performance. If oil clearance is changed from just .0015″ to .006″, the oil throw-off (shown above) increases 25 times. And even the best piston rings can control only about a 5 times normal amount of oil. The excess oil then slips past piston rings into the combustion chamber where it clogs piston rings and builds up combustion chamber deposits.

Federal-Mogul knows, as you probably do, the importance of oil clearances. That's why **Fm** bearings are manufactured to tolerances as close as ±.000125″—1/16 the thickness of a human hair. Why take a chance on anything less than precision engine bearings? You can be sure of a satisfied customer when you use the best. See your Federal-Mogul jobber.



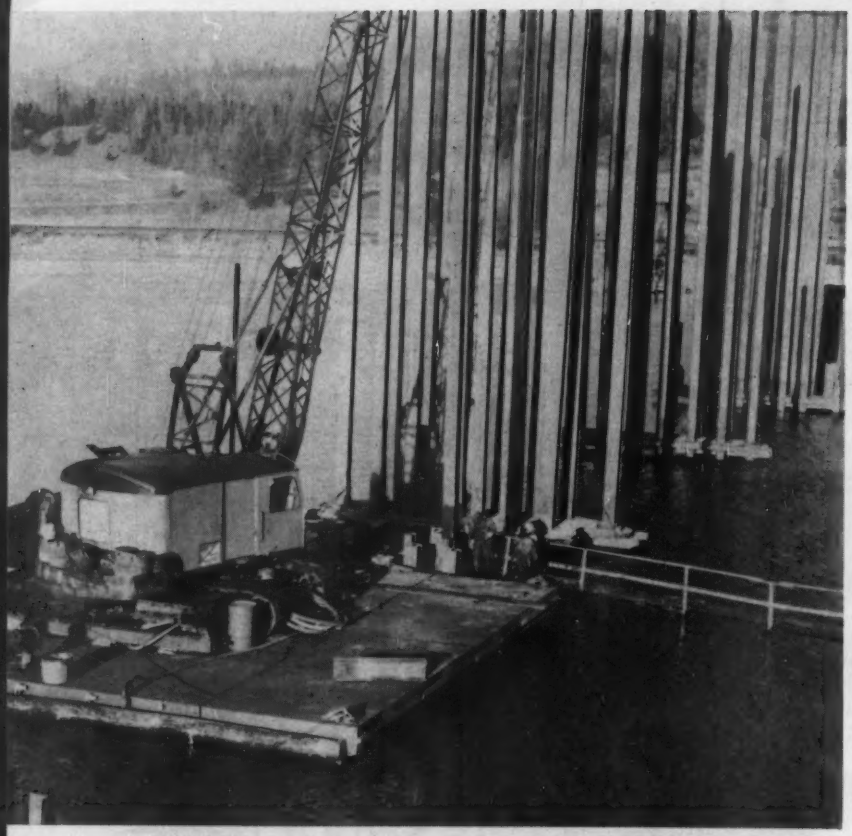
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DIVISION OF FEDERAL-MOGUL-BOWER BEARINGS, INC. • DETROIT 13, MICHIGAN

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▲ *Circle* 117 *on Reader Service Card*



PILE SPLICING—In deep river channel, 60-ft piles must be spliced. A Northwest crane on Flexifloat barge holds the second lengths while workmen tack and weld them.



PILE DRIVING—Pile hammer sinks H-beams through one of the floating timber templets.

Templets Double as Forms,

TEMPLETS that do double duty as forms and forms that double as cofferdams are the keys to the construction of a major railroad bridge that crosses over the Pend Oreille River near Sandpoint, Idaho.

The 1,124-ft bridge is being built by Peter Kiewit Sons' Co. for the Spokane International Railroad. The new structure, which will replace a series of wooden Howe truss spans, crosses a river reach that is part of a reservoir backed up by a dam.

The river at the construction site is not only wide but deep; the distance between good bearing in the river bed and water surface measures 100 ft or more. As a reservoir, the river is immune to the quick—and extreme—jumps up and down of a free-flowing stream. But for the same reason it is subject to broad seasonal fluctuations between winter drawdown and summer flood pool. These circumstances determined the bridge's design. To avoid carrying piers down through such a formidable depth of water, the bridge is founded on clusters of H-beam piles. Each pile cluster is capped by a concrete pier.

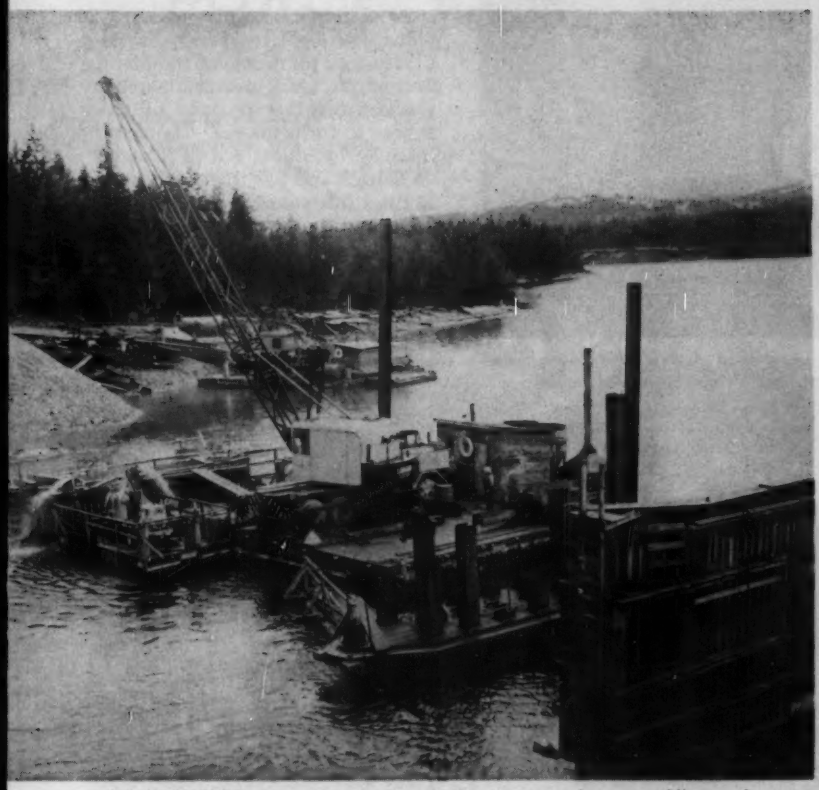
To prevent exposure of the piles and consequent deterioration, the bottom of each pier is 5 ft below the winter minimum pool surface. There are 18 water piers in all. The number of piles per pier varies from 14 to 22.

Design dictated the construction wrinkle employed. Because of deep water, it would have been difficult to ring the piers with cofferdams. Kiewit came up with the template-form-cofferdam technique and thereby solved the problem by sidestepping it altogether.

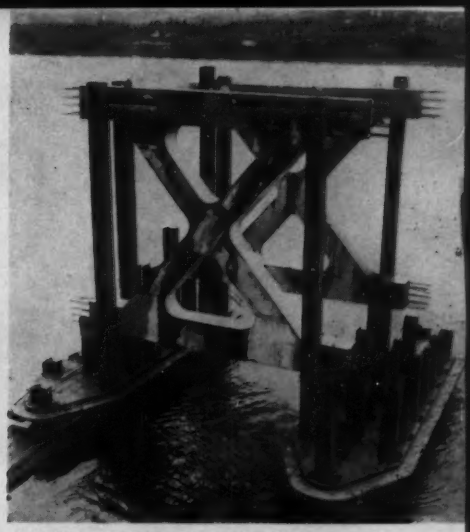
Here is how the job was done:

All piles for a pier were driven through a close-fitting timber templet. The templet, whose outline was slightly larger all around that that of the bridge pier, was 34 ft long and 8 ft wide. Ends were tapered. The templet was built up, or laminated, from four layers of 2-in. lumber for a total thickness of 8 in. This was pierced with properly located cutouts that followed the cross-section outline of the 14BP73 piles. Fastened longitudinally beneath the unit were two 12x12 timbers spaced so as not to interfere with the cutouts.

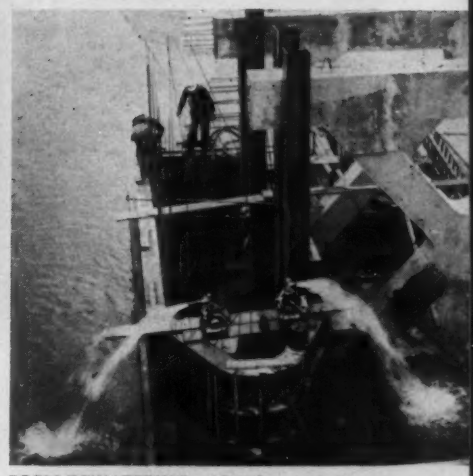
Each pier required its own templet. Constructed on shore, a templet was towed into place and, floating in the water, was tied off. Then the two nose piling were spudded carefully to hold the templet in exact position for setting the remainder of the piles.



PIER PROGRESS—Far unit is dewatered after tremie seal pour, middle one has templet raised prior to forming, and near one has one-half of its side forms in place.



CROSS BRACING—Precast members rest on piles, some of which have been left long to hold them. Next, side forms will be set on combined bottom form and pile templet.



FORM DEWATERING—After form is sunk to right depth, tremie seal is poured. Then Homelite pumps unwater the form so next lift of concrete, 9 ft high, can be poured.

Forms as Cofferdams

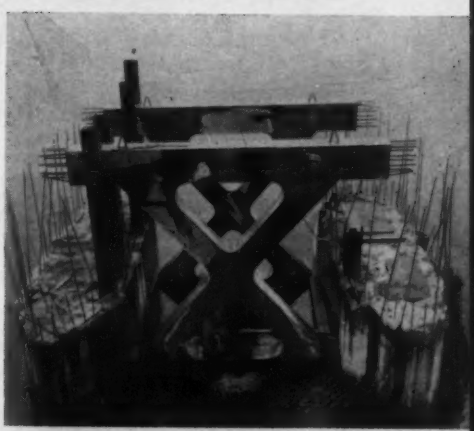
Standard 60-ft piles were used. Additional length was secured by splice-welding sections as needed until the required 48-ton bearing value was picked up by friction in the sand and gravel river bed. A Northwest crane on a Flexi-float barge carried either a Vulcan 0 or No. 1 hammer to drive piles.

When the piles were in place, the templet was lifted slightly above the water by sliding it up the piles. This enabled the side forms of the pier to be set. A 5-ton Beebe hand crab positioned atop a piling at each end of a templet took care of the hoisting.

All preparations for placing concrete were completed while the templet, which now was to serve as the bottom form for the pier, was in an elevated position. When building the templets, the top lamination was inset the proper distance to form a rabbet for the 14-ft-high side forms. These consisted of ¾-in. plywood backed by vertical 2x12 studs on 6-in. centers. Three sets of double 6-in. channel wales held by Superior through-pier form bolts encircled the form.

With the side forms set, the bottom reinforcing mat and the bars around the pier's periphery were put in place. To support the form during concreting, 1-in. hanger bolts were fastened through the templet's 12x12 bottom timbers adjacent to each pile. Angles were welded to the piling's side to receive the hanger bolts. Piles were trimmed to the correct cutoff height.

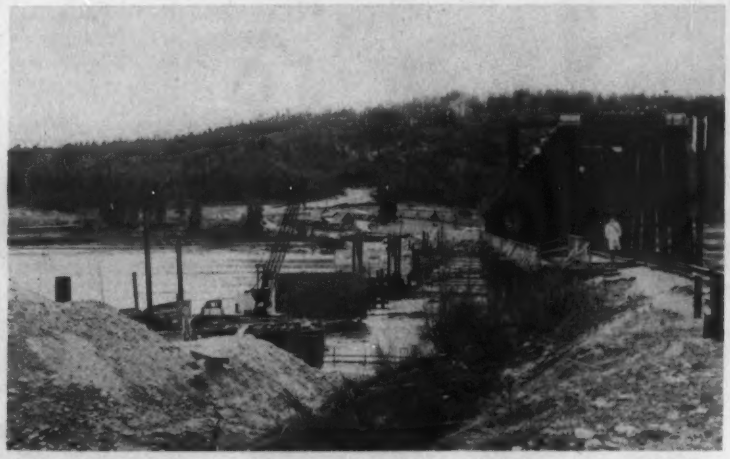
Preliminaries completed, the form was lowered into the water by the crabs to the correct elevation, sliding down the piling through the cutouts of the templet that now was the form's bot-



BRACED PIERS—Second lift of concrete embeds bottom of crossbraces; final lift of 13 ft will embed top. The precast units are 23 ft wide, 20 ft high, 2 ft thick.



PIER PROTECTION—To prevent concrete from freezing during bitter Idaho winter, pier is surrounded by heated house floating on empty oil drums. Tarp closes open end.



NEW AND OLD—To be decked with steel girders, new bridge will replace old wood truss spans (right) of Spokane International Railroad over Idaho's Pend Oreille River.

TEMPLETS DOUBLE AS FORMS . . . *continued*

tom. Negative buoyancy came from the reinforcing steel and the mass of the wooden form sticking above the river surface. The form also was permitted to fill with water.

The form was hung in place by the bolts secured to the angles projecting from the piles. Fine adjustment in alignment and elevation was by nuts on the hanger bolts. At the time the first concrete pour was made, bottom elevation of the form generally was 8 ft below the water surface.

Concrete operations followed. First, a tremie seal was placed to a height of 5 ft. This left the concrete's top 3 ft below the water. The form then was dewatered with Homelite pumps and the second lift was placed, using concrete brought from a shoreside batching plant in buckets on a barge powered by a Sea Mule.

The second lift was 9 ft. This brought the concrete in the pier to a total height of 14 ft. More important, it lifted the pier a little over 6 ft above the water surface, or approximately to the height of the summer pool level. Placing of the final 13-ft lift was accomplished routinely and in the dry.

Stripping involved only the removal of the side forms. Each templet was left in place with no effort at recovery. A skin diver loosened underwater fastenings that tied the side forms to a templet.

Concreting in the winter to take advantage of low water necessitated protection from freezing. For the piers, this was a floating U-shaped, roofed enclosure. Supported by empty oil drums and with one end left open, it was maneuvered into position around a pier. Then a tarp was placed to seal off the open end and a 45,000-Btu space heater went to work to safeguard the concrete.

Protection also had to be provided while precasting crossbraces that join some of the piers. Ten of the piers, set 23 ft apart, are tied together in pairs by the braces to form towers. The reinforced crossbraces are 23 ft wide, 20 ft high and 2 ft thick. Because of their intricate X-shape and the fact that the lower portions are under water, crossbraces would have been difficult to form and pour in place. Instead, Kiewit precast them in a shoreside building within reach of a barge-mounted crane's hook.

The crossbraces were cast in a horizontal position in two stacks of five braces each, with the forms moved upward as each brace was completed. This procedure not only saved formwork but also conserved heated enclosure space.

To seat the 30-ton crossbraces, requisite pier piling was run up to the height of the braces to hold them in place. Cross channels were run from pile to pile to support the arms of the braces. This arrangement held them securely and in alignment until they could be embedded solidly in the concrete of the second and third lifts.

The superstructure will be of deck plate girder construction except for one 93-ft through plate needed to maintain a navigation opening. The tower spans are 23 ft and the others are 70 ft. Because it was more economical to fabricate the deck plate girder spans in the shop than to field erect them, the 70-ft span length was chosen because a longer span could not be moved conveniently by rail to the bridge site.

Spokane International Railroad, which runs 140 miles from Spokane, Wash., to the town of Eastport, Idaho, on the Canadian border, is a subsidiary of the Union Pacific Railroad. Work of the Omaha-headquartered Kiewit firm is being carried out by its Northwest district office at Vancouver, Wash.

Union Pacific personnel identified with the project include J. A. Bunjer, chief engineer; R. M. Brown, district engineer; R. E. Haacke, division engineer; and Tom Riser, resident engineer. For the Kiewit firm, Ivan W. Breunsbach, vice-president, is Northwestern district manager. Bill Hitt, job sponsor, has direct charge of the job. Norm Westling is superintendent, Per Strand is assistant super, and Tom Lyons is engineer-office manager.

MOTO-LOADER® MANEUVERABILITY PAYS OFF IN TIGHT QUARTERS

This Lorain Moto-Loader, Model ML-157, with a 2-yd. bucket, is a work horse for owner Clifford Jensen of Eagle, Wisconsin. It is shown working in close quarters mucking-out a cave-in during construction of a pumping station. It also is used as a push tractor for pans, for pulling compactors, digging and loading out gravel, for snow removal and for handling scrap iron in ship holds. ■ The ML-157 can be versatile for you too, wherever you need its power, stamina, balance and maneuverability. In tight quarters like this, the value of its one-foot control of forward and reverse travel is evident. Leaves both hands free for other controls. Speeds up cycles, contributes to accurate control. And Lorain power steering, full power-shift transmission, the traction effort possible only with planetary axles, proper weight-to-axle balance and finger tip bucket controls add still further to job-handling speed . . . plus, as owner Jensen says, "I find it very convenient to drive between jobs." ■ Why not get the full story today from your nearby Lorain Moto-Loader distributor.

THE THEW SHOVEL COMPANY, LORAIN, OHIO



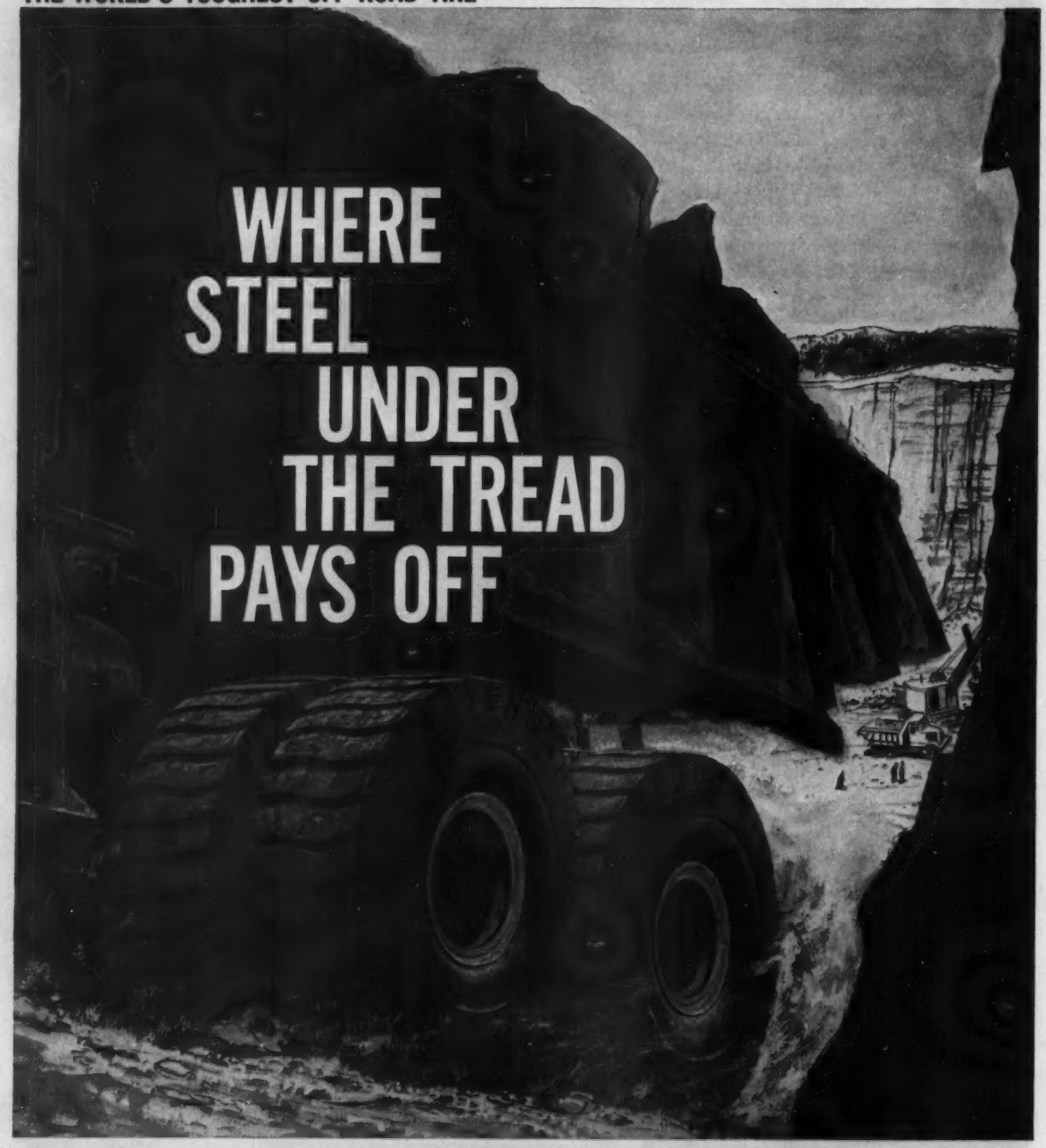
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PRODUCTS—Power shovels, cranes, draglines, clamshells, and hoes on crawlers from ⅜- to 2½-yard capacity • Cranes from 7 to 80 tons . . . on crawlers, and as rubber tire Moto-Cranes, and Self-Propelled Cranes • Rubber tire front-end Moto-Loaders in 6,000-lb., 7,000-lb., and 9,000-lb. operating capacities.
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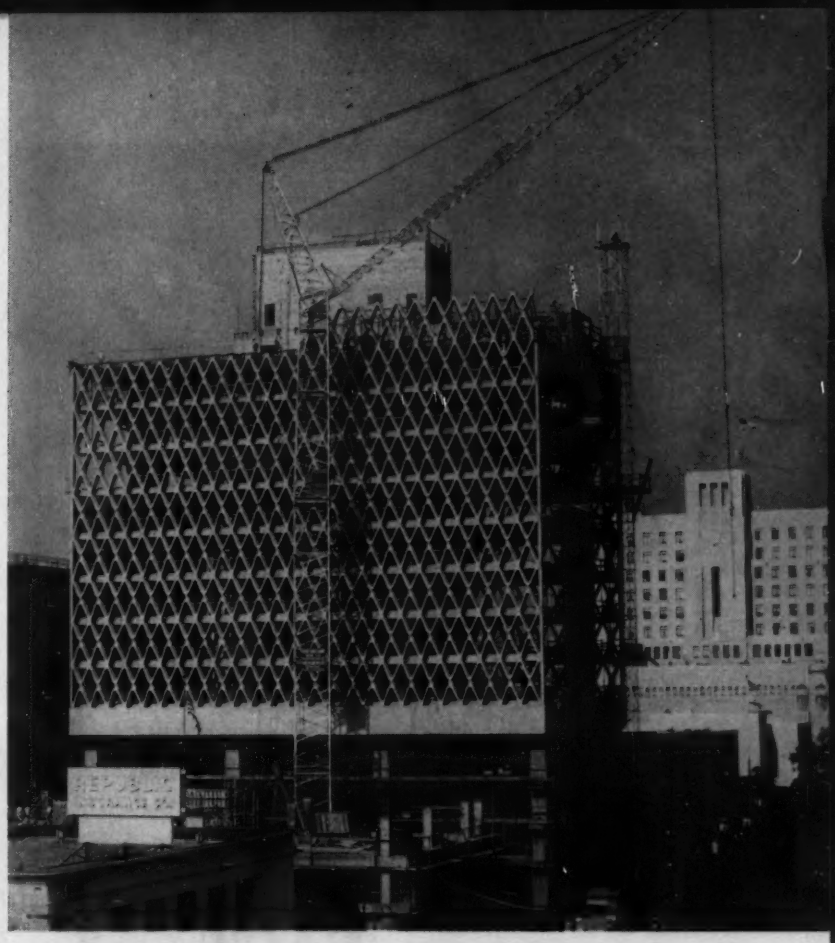


U. S. ROYAL SUPER CON-TRAK-TOR S.R.T.* Deeper tread at center and shoulders—steel reinforced for "chain-mail" resistance to cuts and impact failures • Each brass-coated steel filament is rubber insulated—can't rust out • Double-strength nylon cord body • More durable carcass • More tires retreadable • Prove-test them on your present equipment, specify them for your new equipment. Call your U. S. ROYAL DEALER.

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Circle 122 on Reader Service Card

While one crew slipformed the concrete elevator core for this Los Angeles building, another cast 450 X-panels and 552 floor beams that were placed by a tower crane. X's carry lateral, vertical loads.



PLACING X-PANELS—A Pecco Model 921 tower crane hoists precast X-panels into position atop previously placed row of X's. Workmen tie the panels in with floor beams, slabs, and spandrels. Peter Kiewit cast the X's near the job, trucked them to site.

Concrete Showcase is Precast, Poured in Place, and Slipformed

WHEN A CEMENT COMPANY decides to build a new headquarters building, you can expect it to highlight the many attributes of concrete. American Cement Co.'s new building in downtown Los Angeles is no exception.

The design of the new structure is built around a combination of precast X-panels and beams, and poured-in-place concrete—including some slipforming.

It was up to the contractor, Peter Kiewit Sons' Co., to make the design not only attractive, but practical. First, Kiewit produced the complicated precast shapes itself, instead of depending on a subcontractor or buying the shapes from a commercial producer.

Secondly, the contractor used a tower crane to place the heavy precast members and cut handling costs by an estimated 20%.

Finally, Kiewit cut several weeks off the construction schedule by slipforming the building's central core.

More than 14,000 yd of concrete went into the 161-ft-high structure, which consists of 13 stories and an adjacent four-story parking garage. The first four floors of the main building form a base structure for floors five through 13. On these floors, beams and girders were poured in place conventionally.

It was the tower—floors five through 13—that challenged the contractor. Starting at the fifth floor, big precast concrete X-panels interlock to form a system of inclined columns that are the exterior bearing walls on two sides of the tower.

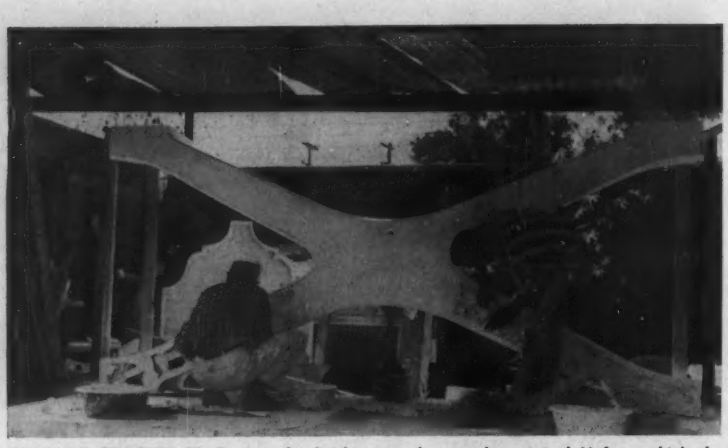
At a nearby yard, Kiewit cast 450 of the X-panels in a series of fiber-glass-lined molds. Forming the original mold was a delicate task. After the architects-engineers for the structure adopted the design, a sculptural consultant was called in to produce a plaster original.

The consultant laid sheet fiberglass over the plaster X to form the inside lining of the first mold. Then the exterior of the fiberglass was buttressed with concrete.

After the initial fiber-glass-lined mold was made, Kiewit cast one concrete X-member and this was used as a master pattern for more molds. From the pattern, nine other molds were made so that Kiewit could turn the precasting job into a production-line operation.

This is how the panels were cast:

Kiewit stretched out all ten molds in a line in its casting yard,



SHAPING PLASTER X—Putting the finishing touches on the original X from which the first mold was made, workmen plaster over timber and wire frame filled with excelsior.

and a crew tied, bundled, and welded re-bars together on jigs to form reinforcing cages. The cages were positioned beside the molds before each morning's pouring operation began. A 15-ton-capacity truck crane set the cages into the molds. Workmen then fitted end plates on the legs of the X's to lock up the molds before casting began.

A 6½-yd ready mix truck delivered concrete from a nearby batch plant. As soon as the truck placed concrete, it was vibrated and a two-man troweling crew finished the panel surface by hand.

The morning after a pour, crews released the end bulkheads and removed the previous day's castings from the molds. Each mold had four jack platforms, one at each corner of the X. H-beam strongbacks were bolted to inserts that had been cast into the molds, and each X was jacked free. The truck crane hoisted the finished panels and carried them to a curing stack.

In the same yard, Kiewit also cast 552 15½x17½-in. floor beams in a series of wooden forms at a rate of seven or eight each day.

While the casting was taking place, Kiewit crews poured beams and girders for the first four floors of the building. At its center is a 20-ft-wide, 50-ft-long concrete elevator core that was slipformed from the fifth floor to the top. Local noise regulations would not allow the contractor to pour continuously. Working from 6 a.m. to 6 p.m., Kiewit raised the slipform 12 to 18 in. an hour.

Each floor of the tower had approximately 65 individual block-

continued on page 126

FLECO® FACT FILE

Owner reports: "MA Rake, used on all phases of land clearing, can really take it."



Fleco MA Rakes are ruggedly built to stand up under the heavy work on your land clearing jobs such as removing stumps, taking out rock, clearing, pushing and piling.

One of the six pieces of Fleco equipment used by Mr. Pacquin of the Von Bulon Corporation to clear over 1,000 acres near Flagler Beach recently, was an MA Rake on a Cat D8 H Tractor. "Four men couldn't reach around some of the trees on this job. We cleared live oak, magnolia, slash pine, cabbage palm and various hardwoods. The MA Rake was used for stumping, clearing, piling and punching up piles. I used my Rock Rake on a D6 for clean-up piling behind the MA Rake," reports Mr. Pacquin.

N. O. Durrance, one of the operators for Mr. Pacquin, said: "The Fleco MA Rake is plenty strong. It takes out the big stumps, almost as big as the Rake. One or two of the teeth often gets full tractor power and this Rake can take it. It levels good too."

Every tractor on Mr. Pacquin's job is equipped with a Fleco Cab Guard. Mr. Pacquin said, "Without a doubt, Fleco Cab Guards saved lives on this job. We also used a Fleco Fire Fan to burn. Our piles had a large percentage of cabbage palms in them and I don't believe there were enough old tires in the State to burn the palms we cleared. I would never tackle a clearing job without a Fleco Fire Fan."

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The Fire Fan and a drum of fuel oil were installed in a jeep which moved from pile to pile to start a raging fire.



The cleared land, located along the Inland Waterway. It is being planted in grass for cattle raising.

See your Caterpillar-Fleco dealer for more information or write direct . . .

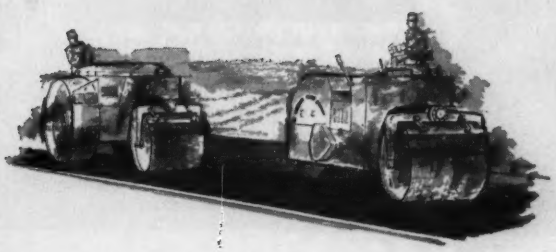
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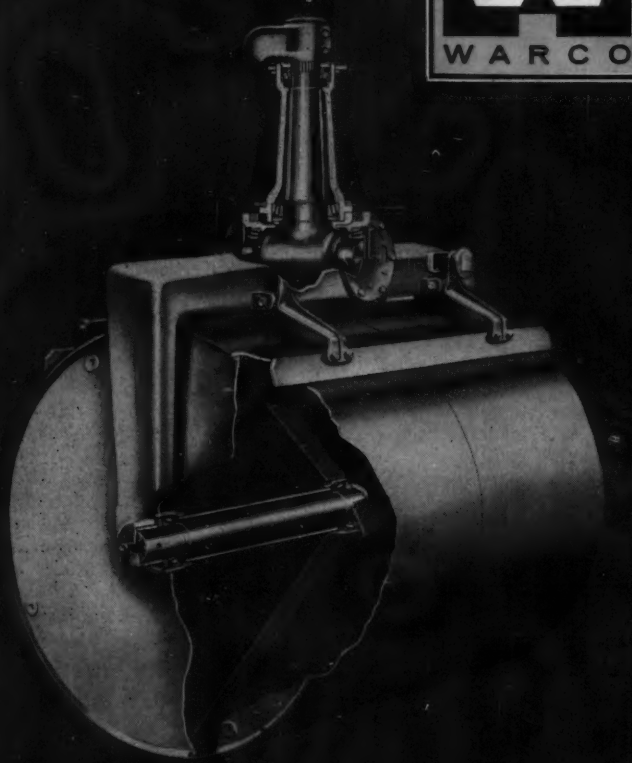
Better rolling with less maintenance



For years a major problem confronting owners of rollers has been road "scuff" caused by looseness in the guide roll assembly. Huber-Warco engineers have solved this problem by making it easy to adjust all elements of the guide roll right on the job. Owners of Huber-Warco tandem and 3-wheel rollers will find a yoke design that permits accurate adjustment of tapered roller bearings at the kingpin, yoke swivel pin and roll axle. As a further precaution against looseness, we have set the bearings on the swivel pin and kingpin wider apart as well as designing a steering arm that is splined — not keyed — to the top of the kingpin, spreading the shearing load around the entire circumference of the pin. Extra long life of the assembly is further assured since all points of movement receive full pressure lubrication. With Huber-Warco design you are assured indefinite factory-perfect guide roll assembly adjustment. See your local Huber-Warco distributor for all the details on the tandem and 3-wheel rollers soon.

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CONCRETE SHOWCASE...
continued



CASTING X-PANELS—Kiewit crews (at left) tighten end bulkheads of fiber-glass-lined molds. Jacks placed on side blocks at corner of each leg later raise finished castings free of molds. In background, another crew works on precast floor beams. While pouring takes place (above), workman vibrates concrete. Surface is hand troweled.

outs. Seven of these were for doors, and the remainder were for beams. Because the building's design limited the location of construction joints to the upper half of the door openings, Kiewit slipped from the top of one 11-ft 9-in. dor to the top of the next door, or one floor per day.

To supply concrete for slipforming, Kiewit constructed an A-frame hoist with a platform for buggies. The platform was guided by its own lifting cables. A winch was located in the basement, where trucks brought in the concrete.

B. M. Heede, Inc., of San Francisco, supplied the jacking system used to slipform the elevator core.

After completing the first four floors and the concrete core, Kiewit was ready to bring in the precast X-panels and beams from the fabricating yard.

Placing the precast members presented several problems. For instance, the 4,000-lb X-panels had to be placed as far as 100 ft out from the face of the building. To handle the panels and beams, Kiewit brought in a Pecco model 921 tower crane with the capacity to handle a 5,000-lb load at a 132-ft radius. The crane had a tower height of 158 ft to the jib pivot point.

At first, the huge crane operated on a track along one side of the building. But to reach all parts of the building, Kiewit extended the track over the first floor of the adjacent garage structure after the slab had been poured. From this track, the crane was able to cover the entire tower and the parking structure.

Because the track was situated on the garage's first-floor slab, Kiewit had to pour the garage around the crane, leaving an opening so that the crane could travel and later back out.

Kiewit also had to provide adequate shoring for the first-floor slab over which the 120-ton crane ran. Although the slab itself was only 4½ in. thick, the situation was helped by the fact that two heavy concrete beams, each 42 ft long, ran parallel to each other beneath the rails. For added support, Kiewit shored these beams with rows of 6x8-in. timbers.

Thus the crane was able to travel along the track and position panels, beams, and materials until the tower was completed.

Starting at the fifth floor, the Pecco crane first placed the X-shapes and then placed beams in the span from the X's to the concrete elevator core. At the core, the beams fitted into blockouts left in the slipformed core wall. The beams' other ends were seated on precast cut-out portions of the X-panels.

The forms for the building's 4½-in. floor slabs were supported off the precast beams. The only shoring required was for poured-in-place girders—two at each end of each floor—that ran from the core to opposing shear walls.

When pouring a floor slab, the contractor left an 18-in.-wide strip unpoured at the X-members. When the X's for the next floor were erected, they were braced to the previously poured slab. Then the 18-in. portion of the slab, which included a spandrel beam, was poured to join the X's together with the floor slab and precast beams. Until a slab was poured, each X rested on top of a previously placed X with a 3½x8-in. bearing where the legs joined.

Kiewit joined the X's in the fifth, sixth, and seventh floors by butt welding the reinforcing bars extending from each leg of an X to the corresponding leg of the



AN IMPORTANT NEW BLASTING TECHNIQUE PIONEERED BY HERCULES

PRESPLITTING is a forward step in the advancement of a more efficient blasting technique. This new method of controlled blasting, pioneered by Hercules Powder Company, produces "line-drilled" results without the excessively high costs of actual line drilling.

PRESPLITTING has the following advantages over normal methods of blasting:

1. Rock overbreak behind the PRESPLIT blast holes reduced to an absolute minimum—*less extra unpaid-for excavation and less concrete required because excess overbreak is eliminated.*

2. Fewer blast holes required than for line drilling—*extra dollar savings in drilling costs.*

3. Reduction in ground vibrations from primary blasting—*fewer complaints from nearby householders and industries.*

4. Sheer, clean rock wall obtained—*greatly reduced scaling time.*

5. Back shattering reduced—*much safer wall to work under; walls require less maintenance.*

6. Entire cut may be PRESPLIT with one blast—*saves resetting up time.*

Detailed technical information about PRESPLITTING is available in bulletin form. Ask your Hercules representative for a copy and learn how PRESPLITTING will reduce costs on your job.



Explosives Department

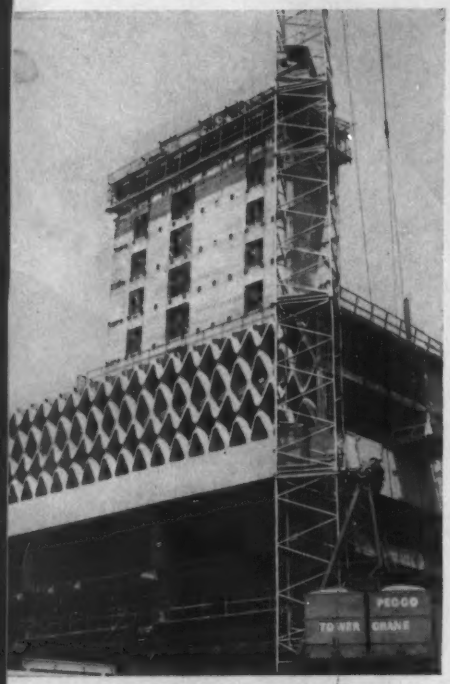
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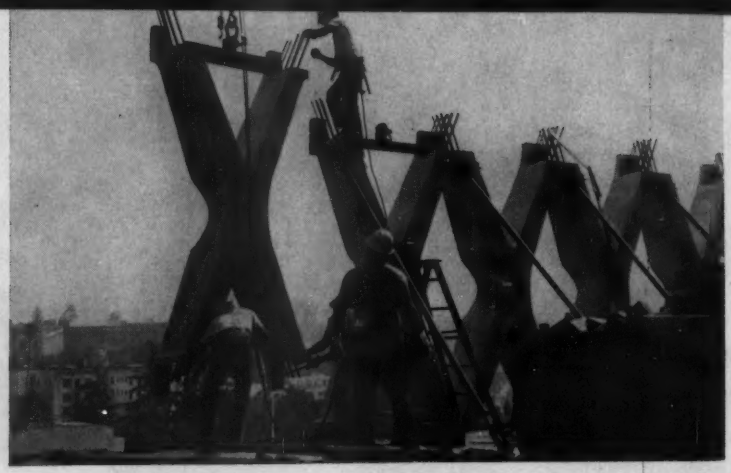
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XR-61-3

Circle 127 on Reader Service Card



PLACING MEMBERS—Pecco tower crane lowers precast floor beams into blockouts left in slipformed elevator core. Opposite ends of beams rest on notches in X's.



SEATING X'S—X-panel is lowered into place on top of previously set X by tower-crane. New X is braced to floor slab.

CONCRETE SHOWCASE
continued

X above. Above the first three floors of X panels, a lap joint on the re-bar steel was sufficient.

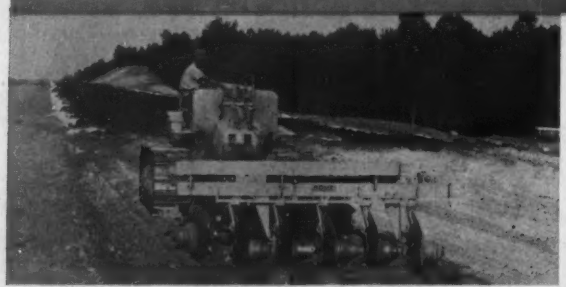
Between the four-floor base structure and the tower structure, Kiewit built a transition section. This consists of an 8-ft-deep mechanical floor between the building's fourth and fifth floors. The entire depth of this floor is taken up by eight concrete girders that transmit vertical loads to the building's eight major columns.

Bordering the two street sides of the completed building is a precast non-structural concrete grill. This extends from the second floor to the transition level between floors four and five. There are 249 precast sections, each 17 in. wide and 22 ft high, in the concrete screen.

Kiewit formed these sections

continued on page 132

BUILD HIGHWAYS THE ROME WAY



MIXING AND BLENDING. Rome Model TRCH 10-36 Hinge Type Offset Disk Plowing Harrow cuts up to 13" deep for low cost mixing, blending, bonding lifts.



AERATING. Rome Model TRH 20-30 Hinge Type Offset weighs over 9,000 lbs. — heavy duty construction for less maintenance, longer life.



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TOUGH, VERSATILE AND MONEY SAVING. Rome Disk Plowing Harrows are available in many sizes and types. For aerating, mixing, scarifying, pulverizing—there's a ROME for your job, your equipment. See your Rome-Caterpillar dealer.

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Circle 129 on Reader Service Card ➤

JOISTOLOGY*

HAS ADDED VERSATILITY—

TO MODERN FLOOR AND ROOF CONSTRUCTION

***joist-ol'o-gy, n.** (As Webster *should have* defined it) The art or science of designing and building more economical structures through the use of open web steel joists.

Architects and engineers have found that steel joists have given them practically a free hand in the design and construction of today's buildings. These lightweight, space-saving structural members have been adapted to virtually every size and style of building, whether it's one story or twenty, ultra-modern or ultra-conservative.

Steel joists have done more than provide high-strength support for floors and roofs. They lend themselves so handily, and so economically, to the incorporation of overhung roofs, cornices, balconies and other architectural embellishments into building design.

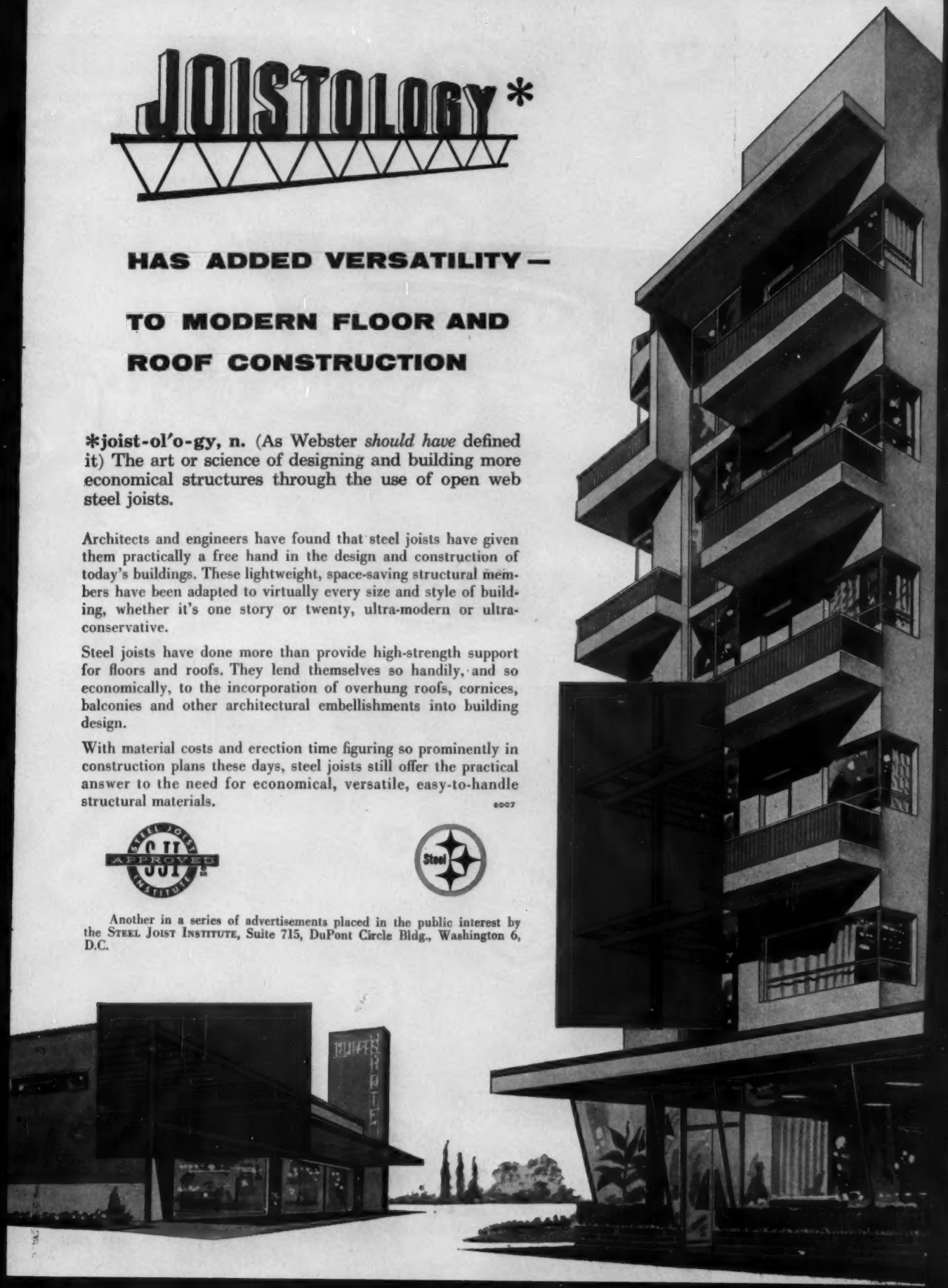
With material costs and erection time figuring so prominently in construction plans these days, steel joists still offer the practical answer to the need for economical, versatile, easy-to-handle structural materials.

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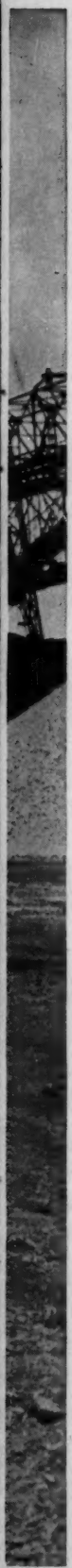
STEEL JOIST APPROVED SJI INSTITUTE

Steel

Another in a series of advertisements placed in the public interest by the STEEL JOIST INSTITUTE, Suite 715, DuPont Circle Bldg., Washington 6, D.C.




DODGE



Dodge heavy-duty trucks for 1961 are the toughest, stingiest, workingest trucks we've ever built. They all feature cab forward design that lets you put a bigger body on the same wheelbase. And swing-out fenders that make engine servicing a cinch. The heavy-duty Dodge engine lineup includes both gasoline and diesel models. Six and V8 gasoline engines to 228 hp. Tough Cummins diesels to 220 hp. Frames, clutches, transmissions and axles, job-rated to fit your needs. Heavy-duty Dodge cab forward trucks and tractors run from 28,000 lbs. to 53,000 lbs. GVW, and from 55,000 to 76,800 lbs. GCW—single axle and tandem. From top to bottom Dodge trucks are priced to compete with any truck made.

And one more thing. Our 24-hour-a-day, seven-day-a-week emergency parts system. When you need parts for a Dodge truck, you get them fast. SEE YOUR DODGE DEALER.

DODGE BUILDS TOUGH TRUCKS

TOUGHEN YOUR FLEET WITH DEPENDABLE DODGE TRUCKS

A PRODUCT OF CHRYSLER CORPORATION



ALL-NEW DART PICKUP! First and only full-size truck with compact-economy. Comes with 7½′ or 8′ pickup box. Available with either 140 hp. inclined Dart Power Six or 200 hp. V8 engine. Priced to compete with any other truck you can name.

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16 MODELS of FULLER 3-SPEED AUXILIARIES

Specify **FULLER...**
Specify the **MODEL**
Get the 3-speed auxiliary designed for your job.

HIGH CAPACITY . . . WIDEST RANGE OF RATIOS . . . OPTIONAL TOP-MOUNTED POWER TAKE-OFF . . . LOW INITIAL COST, LESS MAINTENANCE . . . AVAILABLE FROM ALL LEADING TRUCK MANUFACTURERS ON SPECIFICATION



Specify the MODEL
Choose from 16 Models of FULLER Three-Speed Auxiliaries

FULLER TRANSMISSION DIVISION
EATON MANUFACTURING COMPANY
KALAMAZOO, MICHIGAN
Circle 132 on Reader Service Card

132



CRANE ERECTS SELF—The 158-ft tower of crane hydraulically pivots into place.

CONCRETE SHOWCASE

continued from page 128

from fiber-glass-lined molds. The same procedure was used as for the X's. First, a full-scale plaster model was made, and from this the first mold was cast. Then the contractor cast one concrete grill to serve as a master pattern to make eight more molds. Kiewit poured seven grill members a day.

Bob Carlson was Kiewit's project manager and Harold Henderson was the contractor's job superintendent. James Kesler, chief structural engineer, and Albert Salibian, project structural engineer, represented Daniel, Mann, Johnson & Mendehall, the architects-engineers. Malcolm Leland was the sculptural consultants. The Pecco tower crane is owned and operated by American Pecco Corp.

JIB RISES—After tower is fastened in place, the Pecco's 125-ft jib is raised.





The Hammersley Construction Company of Madison, Wisconsin is fulfilling its contract to move 2,500,000 yards of dirt in the construction of three Badger State highway interchanges with scrapers equipped entirely with Fuller Transmissions.

2½ Million Yards of Earth Moved by Fuller-Geared Scrapers

Hammersley Construction Company is heap-loading on fast work cycles with one Allis-Chalmers TS 360 geared by a Fuller 5-speed 5-G-1520 Transmission, eight LeTourneau-Westinghouse Model B Tournapulls—all geared by Fuller L-1550 10-Speed Transmissions—and seven Model C Tournapulls equipped with Fuller L-1220 Transmissions.

"We've used Fuller Transmissions in our scrapers for some time," states Fay Hammersley, Jr., owner of the company, "and we've had good results with them. On any new equipment, *I'll specify Fuller.*"

Models 5-G-1520, L-1220, and L-1550 Transmissions are equipped with air-powered Countershaft Inertia Brakes for quick up-shifts, and with Fuller Pressure Lubrication and Filtration Systems to provide positive lubrication, maintain clean oil, and greatly prolong gear and bearing life.

For easier, quicker shifts with engines operating in the peak horsepower range, lower fuel consumption, and GREATER PROFITS in your earth-moving operations . . . specify Fuller Transmissions.

FULLER TRANSMISSION DIVISION

EATON MANUFACTURING COMPANY

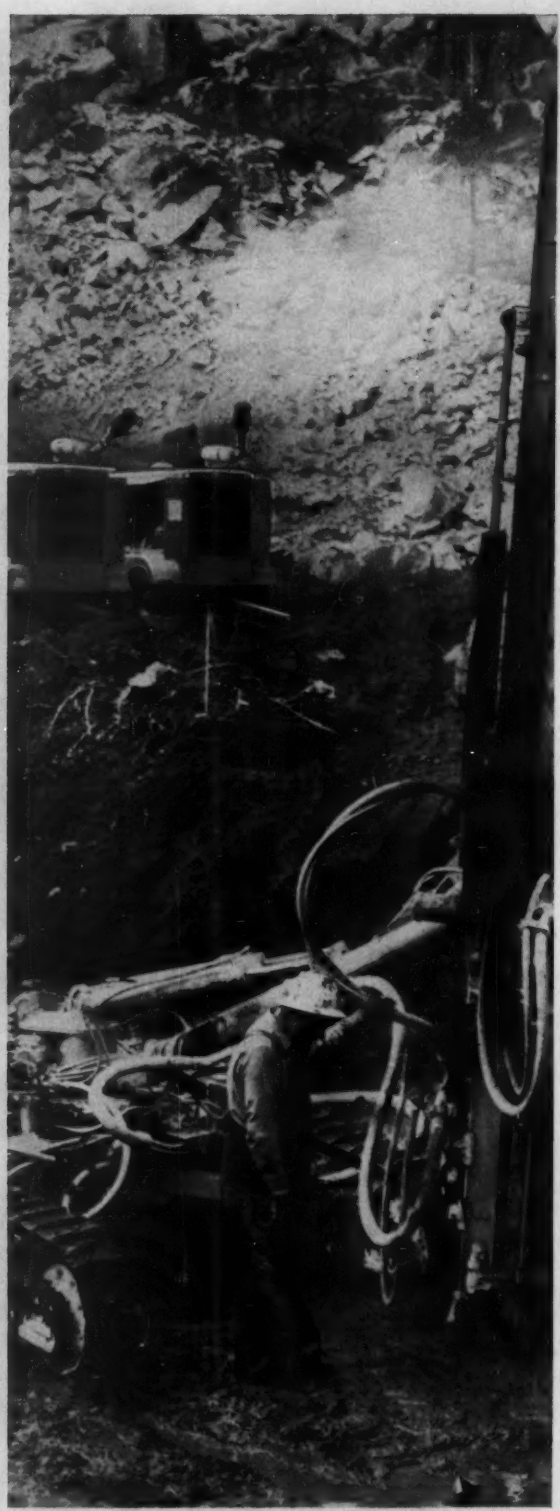
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Circle 133 *on Reader Service Card*



ROCK AND RUBBLE is never a problem for a G-900. Two sets of grouped controls . . . one at turret, one at boom end . . . save driller time and steps . . . keep him banging down blast holes right on schedule.



MUD, MUCK OR MIRE... the new G-900 takes bad going right in stride. You can always tram into position no matter how tough the going . . . stay put when set.

any ground is right for a Tracdril!

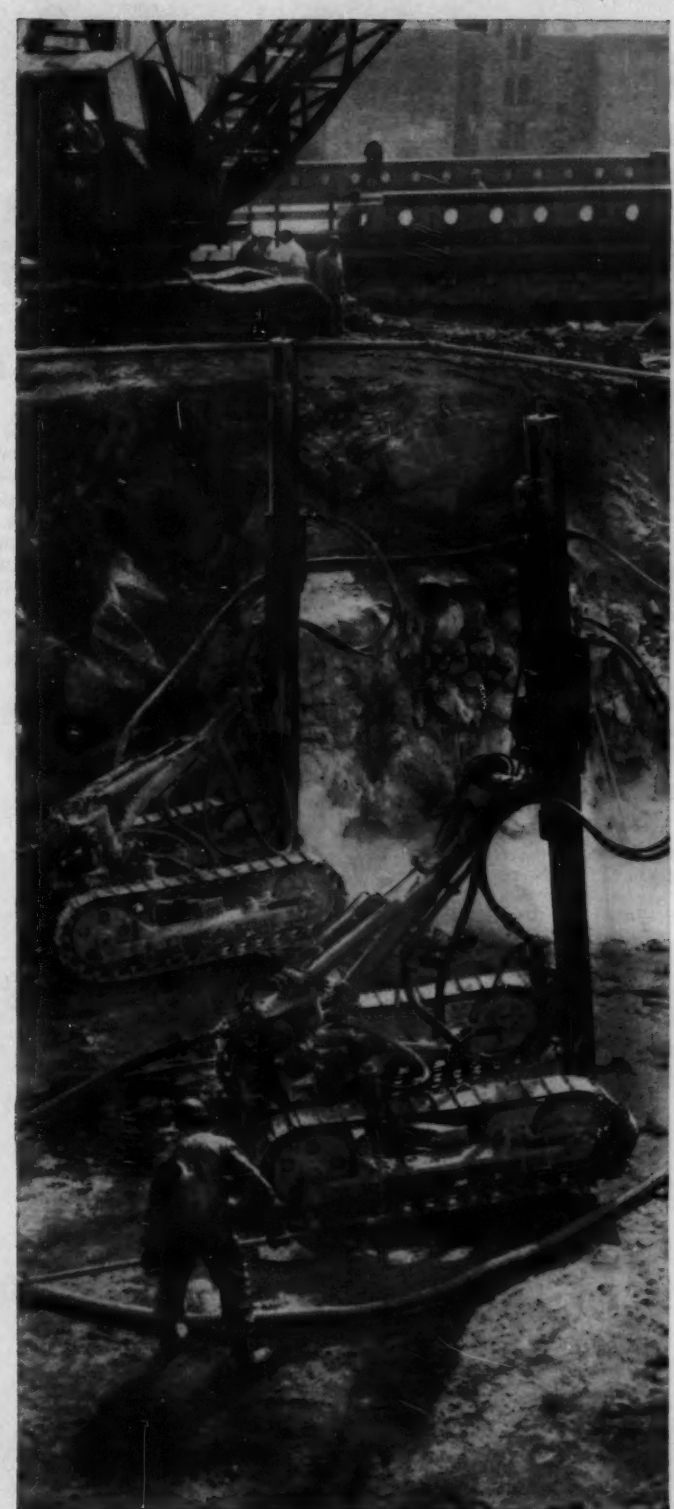
Hard-slugging, easily controlled G-900's can lick your toughest drilling problems . . . keep coming back for more

Tough terrain and a tight schedule often go together. Put sure-footed, hard-hitting G-900 Tracdrils on the job and the blast holes go down fast. "Boarding House Reach" (180° boom swing) pays off . . . you can drill more holes from every set-up. Shifts quickly from verticals to high horizontals . . . 11 feet at the face, or snake holes at ground level. Bad footing can't stop a Tracdril! And in spite of grades, mud and boulders, the heavy-duty brakes hold 'em where you put 'em. Brakes lock automatically the instant the tramming throttle is released.

Get complete specs on the NEW G-900! Write for SP-3267 to: **Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, N. Y.**

Chicago Pneumatic

PORTABLE AIR COMPRESSORS · PNEUMATIC AND ELECTRIC TOOLS
RECIPROCATING · THREE-CONE AIR-BLAST BITS · ROCK DRILLS



MANHATTAN SCHIST AND GRANITE demand constant, hard-slugging action. And deep cuts demand the stamina that only a G-900 can deliver on a full shift basis day after day.

Circle 135 on Reader Service Card

The newest reason to make your next tandem a FORD:

'61 FORD HEAVY DUTIES

GIVE TWICE THE CAB, FENDER AND RADIATOR LIFE!

Rugged Ford Heavy Duties utilize heavier gauge steel, sturdier reinforcements, and a new independent mounting system to separate cab, fenders and radiator. This stronger construction, with each component *individually* frame-supported, doubles cab, fender and radiator life—cuts downtime delays and maintenance expense.

CAB—A 25% heavier floor pan and toeboard provide a solid base for greater cab durability. New full-length door pillar reinforcements and stronger inner door panels minimize door sag. New triangular mounts keep cab level and protect it from frame-movement stresses.

FENDERS—Ford fenders are 25% heavier gauge, too. They are bolted to a rubber-cushioned transverse support in front for needed flexibility. Fender-wide rear brackets provide necessary rigidity. The removal of only 9 bolts permits pulling the fender assembly for easier access to engine.

RADIATOR—New Ford "lock-seam" construction doubles the solder area on key seams, and heavier gauge tank and header walls provide increased radiator strength. "Horse collar" mounting on rubber pads soaks up vibrations and diagonal braces at sides give solid support.

Ford's separate mounting of cab, fenders and radiator frees them from frame-movement stresses that occur when these parts are rigidly attached to each other. Result: failures and service costs are reduced even in tough off-road operation.

Ford T-Series tandem rear axle trucks and tractors are available with GVW's up to 51,000 lb.—GCW's up to 75,000 lb. Your choice of Timken or Eaton axles with up to 38,000 lb. tandem capacity. Seven exclusive-truck V-8 engines range from 302 to 534 cubic inch displacement.



SEVEN MORE REASONS WHY IT'S GOOD BUSINESS TO DO BUSINESS WITH FORD!

You save from the start with Ford's traditionally low prices, and your savings continue with low operating and maintenance costs. These facts are documented by certified test reports from America's foremost independent automotive research firm. Ask to see these reports. They're on file at your Ford Dealer's.

In addition to these dollar-and-cents savings, the following bonus benefits are yours with Ford Trucks:

1. **Rigid quality controls** give you the strongest safeguard of truck reliability ever. Modern, *exclusive-truck* manufacturing facilities, with emphasis on quality every step of the way, are designed to give you a Ford Truck that is as free from defects as a truck can be. Tangible results of these high standards are Ford's new warranties.

2. **Exclusive 100,000-mile warranty** (or 24 months) on 401-, 477- and 534-cu. in. Super Duty V-8's is the most liberal in the industry. Each major engine part (including block, heads, crankshaft, valves, pistons, rings), when engine is used in normal service, is warranted by your dealer against defects in material or workmanship for 100,000 miles or 24 months, whichever comes first. The warranty covers full cost of replacement parts . . . full labor costs for first year or 50,000 miles, sliding percentage scale thereafter.

3. **12,000-mile warranty** (or 12 months) on all 1961 Ford Trucks of every size is further evidence of the confidence Ford has in its quality controls. Each part, except tires and tubes, is now warranted by your dealer against defects in material or workmanship for 12 months or 12,000 miles, whichever comes first. The warranty does not apply, of course, to normal maintenance service or to the replacement in normal maintenance of parts such as filters, spark plugs and ignition points.

4. **Special fleet financing** can be arranged by your Ford Dealer. It's available for owners of two or more trucks, and provides the opportunity to precisely tailor payments to your income patterns or depreciation schedules. This fleet-fitted financing offers substantial savings and frees your working capital.

5. **Sales engineers and service specialists** in 36 district offices are on call to solve special truck problems. Working with both dealers and customers, these experienced truck men represent another extra step Ford takes to provide your continued satisfaction.

6. **Replacement parts depots** at 26 strategic locations across the country quickly supply needed parts from ample stocks. Ford's entire supply system is geared to give you faster service and reduce costly downtime . . . *wherever* you are.

7. **6,800 Ford Dealers,** including 280 specialized Heavy Duty truck dealers, can keep your trucks ready to go wherever they go. From coast to coast, fast Ford service—gas *and* Diesel—is always close at hand.

From Super Economy pickups to Diesel-powered tractors, you can now fill every truck need up to 76,800 pounds GCW with a modern, money-saving Ford Truck.

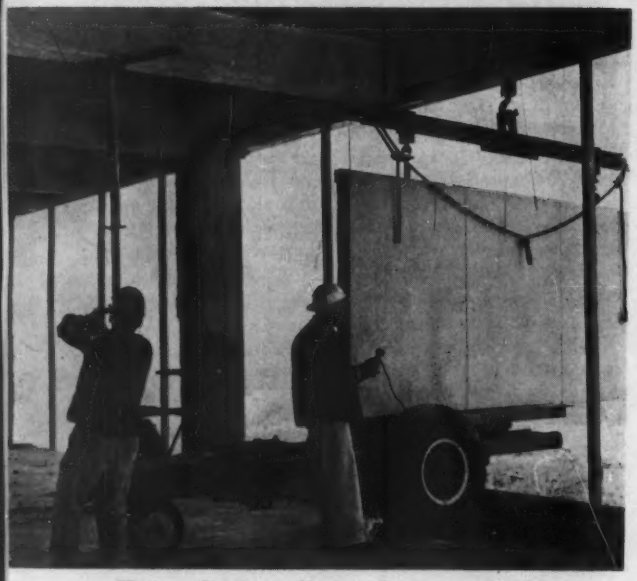
Quality-Built...Maintenance-Engineered

FORD TRUCKS COST LESS

FORD DIVISION, *Ford Motor Company*



Circle 137 on Reader Service Card



Hoist places wall panel on carrier buggy.



Driver takes panel to its place in wall.

Two self-propelled buggies that carry and position concrete panels speed curtain wall construction for a Houston hotel.

Buggies Built From Scrap Move and Place Wall Panels



Lift buggy holds panel for positioning.

EVERY TEN MINUTES a 3,000-lb precast concrete panel goes into place to form the curtain wall for a new hotel in Houston. Workhorses in this operation are two articulated buggies that move and place the panels.

One buggy moves the panels from a hoist to the proper location along the wall. The other buggy, on the floor above, lifts the panels off the first buggy and positions them in the wall.

The erection procedure was developed especially for this project by the curtain wall subcontractor, Winn-Lee Masonry Co. of Dallas. The buggies, which were built from odds and ends, are driven by engines and power trains salvaged from old concrete buggies.

General contractor on the Sheraton-Lincoln Hotel is the Manhattan Construction Co. of Houston. The hotel will have 28 stories above the ground and a three-story garage below.

Basically, the hotel is a steel frame structure sheathed in precast concrete and glass. The 6x12-ft concrete curtain wall panels are 4 in. thick and are faced with crushed quartz. Hollow 2x3-in. vertical steel girts holds the panels in place.

Winn-Lee's contract covers the installation of the panels. These are difficult to handle because of their size and weight, but the self-propelled, articulated buggies have licked this problem. And the whole operation of moving the panels from truck to wall takes only eleven men.

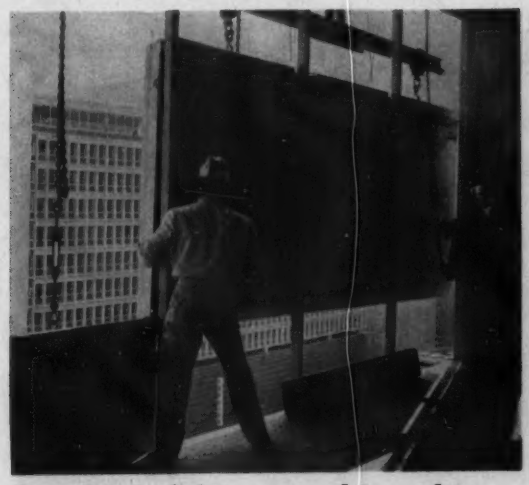
A crew of three work at ground level. Two men on a truck attach a lifting strongback to eye bolts screwed into the top edge of a panel, and another man operates a hoist.

Four men in the building move the panel from the hoist and hang it in position. One man helps control the hoist by giving directions to the operator over a phone. Another drives the carrier buggy, and two men position the panel in the wall.

Only one man is needed to operate the hoist



Carrier moves panel over edge of floor.



Buggy's winch lowers panel into place.

buggy that holds the panel while it is positioned. This releases the carrier buggy so that it can go back for the next load.

Three men follow up the operation. One bolts the panels to clips that are attached to the girts, and a welder completes the connection after the bolts are tightened. Finally, a painter coats the weld.

Two Buggies Made For $3,000

It's a mass-production operation that enables the contractor to place one panel every ten minutes when everything is running smoothly. The buggies run continuously, and the crew goes through its paces like clockwork.

The buggies are similar in design. The carrier buggy rides on big airplane wheels to reduce pressure on the floor slabs. It is equipped with posts and clamps that hold the panels vertical as they are wheeled into position. The hoist buggy is equipped with winches that lift the panels.

Extendable vertical posts on the rear ends of the buggies anchor them to the building while the crews handle the panels. On the carrier buggy, the post extends from the floor to the ceiling; on the hoist buggy it extends only from the rig's frame to the ceiling. The posts are made of adjustable scaffold legs so that they can be tightened in position.

Drive units for the rigs were salvaged from power buggies built by Whiteman Mfg. Co. of Pacoima, Calif. They are powered by one-cylinder, air-cooled Wisconsin engines. Winn-Lee built both rigs for about $3,000.

The buggies are only 48 in. wide so they can fit through the 52-in. passages in the building. To help stabilize the buggies, they are equipped with casters on one side of the frame.

Installation Is Simple and Quick

Operating procedure with both buggies is simple. As the hoist lifts a panel to the proper floor, the carrier buggy jockeys into position to receive it.

When lifting, two hooks at the ends of the lifting strongback hold the panel parallel to the side of the building and away from its frame. The hooks travel on guide cables stretched between the ground and the top floor. When the panel reaches the carrier buggy, the guide hooks are released and the panel is turned 90 deg so that it can be placed on a sliding support extended from the buggy.

The posts and clamps that hold the panel also slide horizontally with the support. As soon as the panel is secured on the buggy, the hoist lowers the strongback for the next panel.

Next, the operator drives the buggy to the point where the panel is to be installed and secures the rig in place by tightening the extendable post. The sliding support is extended, and the panel is moved out over the edge of the floor. Then the hoist buggy on the next floor takes over.

Hoist Buggy Positions Panels

This buggy also is anchored in place by an extendable post. Two extendable scaffold legs in front of the buggy take the load off its automobile tires.

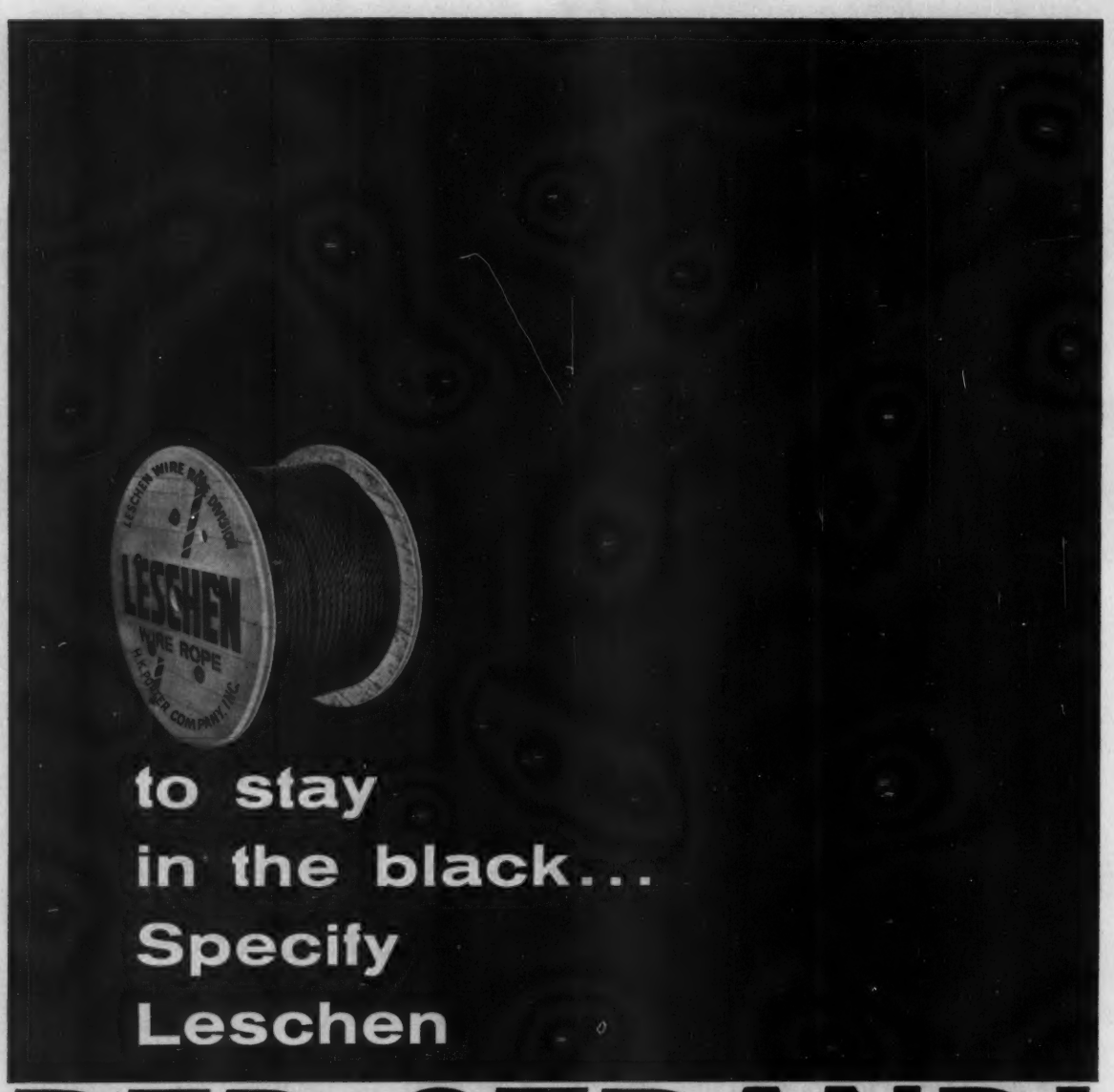
One two-ton Beebe winch is mounted on a horizontal slide. This winch lifts the panel off the carrier buggy, and the slide moves the panel far enough over the edge of the floor so that it can be turned 90 deg to line up with the wall. The carrier buggy is now free to go back for another panel.

When a panel is oriented properly, a five-ton Beebe winch mounted on the rear of the hoist buggy's frame pulls the slide back toward the building until the panel touches the girts.

Then two hooks are attached to the panel to hold it in position. The hooks hang on chains looped around 1-in. reinforcing bars that span between girts on the floor above. As soon as the hooks take over the panel, the hoist buggy moves on.

Both chains that hold the panel are equipped with turnbuckles that allow accurate elevation adjustments. When the panels are in their final location, bolts are inserted through clips on the girts and tightened into the spring-loaded nuts previously placed in the panels. Welding and painting complete the installation.

Project manager for Manhattan Construction Co. is Bill Bullen. Superintendent for Winn-Lee Masonry Co. is Floyd Snodgrass.



RED-STRAND!

Black . . . the most attractive color in bookkeeping. There's no magic formula for staying in the black, but careful consideration of the right type and make of wire rope can cut costs substantially—10%, 20% or more.

RED-STRAND users are accustomed to longer-than-expected wire rope service, because higher-than-catalog-rated quality is built into the rope. They know that Leschen distributors and field men make sure they have the best rope construction for the job at hand. They know, and you can too, that for wire rope and sling needs—specify RED-STRAND and stay in the black! For the name of your nearest Leschen distributor write: Leschen Wire Rope Division, H. K. Porter Company, Inc. 2727 Hamilton Avenue, St. Louis 12, Mo.

PORTER

LESCHEN WIRE ROPE DIVISION
H. K. PORTER COMPANY, INC.

Circle 140 on Reader Service Card

Schye and Sullivan Construction Co., White Sulphur Springs, Montana, works its LW Tournatractor as a pusher as well as all-around dozer on its construction jobs. Here, 34,600-lb tractor push-loads one of the firm's 4 C Tournapulls on highway job near Glendive. Wide range of LW attachments — such as Angledozer® blade, root rake, push plate, powered-control-unit — let Tournatractor handle *many* jobs fast, and at low cost.





LW Tournatractor®

money-maker on any job

these reports tell you why:

Schultz and Lindsay, Fargo, North Dakota, handles widely-separated tractor jobs fast and efficiently with 17-mph Tournatractor. On recent 3½-mile flood-control project, where work was scattered "all over the lot", LW tractor not only saved time traveling job-to-job . . . it saved time *on the job*. With higher *working* speeds, both forward and reverse, Tournatractor completes most assignments *substantially* faster than comparable crawlers.







Nello L. Teer Co., Durham, North Carolina, gets more work done at less cost with its LeTourneau-Westinghouse Tournatractor. For example at Teer's 60-acre sand-and-gravel pit near Erwin, N.C., the LW tractor dozes material into hoppers, maintains haul roads, stockpiles sand, pushes rail cars. Often travels up to 100 miles in a 10-hr day. Handles *all* tractor-work economically.

John Kerestly, Boynton Beach, Florida, specializes in land clearing. To handle its jobs — most of them widely scattered within a 50-mi radius — Kerestly uses 2 Tournatractors and an LW 4-wheel drawn-scraper. The rubber-tired tractors are driven to projects . . . saving the expense of truck-trailer haul. Says John Kerestly, "Tournatractor's fast, dependable, efficient!"

Shellhouse Brothers, Aiken, South Carolina, assigns its LW Tournatractor to push-loading duty . . . a job once "traditionally" handled by crawlers. How did the 218-hp LW tractor perform? Says job superintendent Walter Tankersly, "It's our *best* pusher! It loads our 'Pulls* faster, helps us move more pay dirt. And this tractor gives our scrapers a boost into high gear as they leave the cut, further reducing cycle time."

NOW . . . a choice of Tournatractors



In addition to the standard electric-control LW tractor, LeTourneau-Westinghouse now offers you a Tournatractor with hydraulic blade control. This unit is equipped with the GM V-Power diesel engine (6V-71) producing 218 hp. Top speeds: 18.5 mph forward, 6.2 mph reverse. See us for details.

*Trademark CT-2342-DCJ-1

LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

Circle 141 *on Reader Service Card*





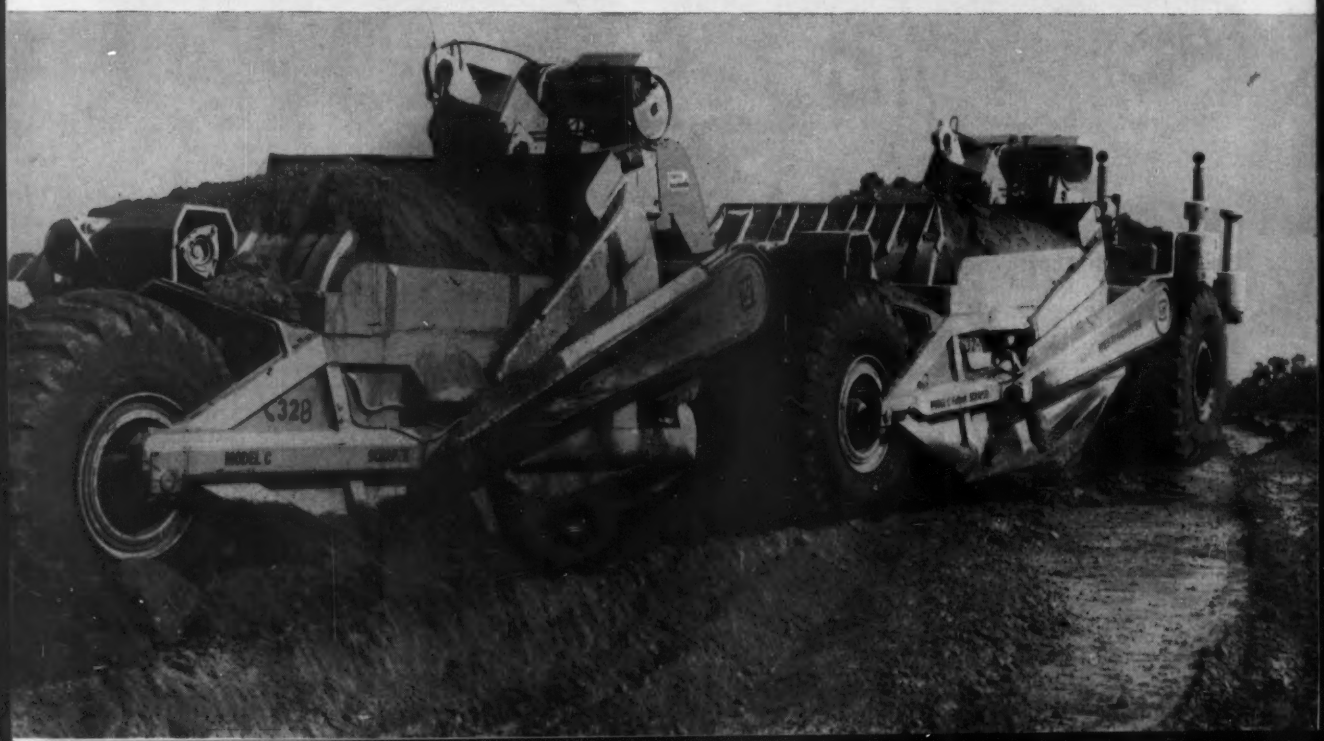
"Keep moving . . . have little downtime," says Leonard "Len" Stahoski, Secretary of Stack Construction Co., Milwaukee, Wis. "We've run 'Pulls since 1950. They *do* what we want them to do . . . that's why we're LW all the way!" This LeTourneau-Westinghouse 290-hp V-Power C Tournapull® is fast all through the cycle because it has the best power-to-weight ratio in its class: 307 to 1. Accelerates to top-hauling speeds 20% faster than other scrapers in the "C" category.

"Produce 25 to 30% more than our older machines on half-mile cycles," reports James A. Christy, Superintendent for Booth and Olson, Sioux City, Iowa. Footing on this 594,000-yd highway project was often *"so soft* you couldn't run a grader on it". But Booth and Olson's 6 C 'Pulls kept production on schedule. LW power-transfer differential and kingpin electric power-steer "walk" Tournapulls out of wet, muddy going on cuts, haul roads, and fill areas that stops other scrapers.

EARTHMOVING MEN WHO KNOW TELL YOU

why C 'Pulls* move more

"Hooked-up in tandems, they're still fast," says Superintendent Bill Conners on a subdivision project at Fullerton, Calif., where Boeck Paving Company operated 2 C 'Pulls with tandem scrapers. In just 6½ hours, these two LW machines *moved 5000 pay yards!* Only LeTourneau-Westinghouse offers you a practical way to use tandem scrapers for *double capacity* on every trip. LW's exclusive electric-control system sends working power *any* distance with *no* loss of efficiency. And, the ball-and-socket swivel-hitch permits 180° nonstop turns in area only 20 to 25% wider than with "singles". You back up, too, with no tendency to jackknife.





"Keep us ahead of schedule," comments Superintendent C. J. Bogue Jr. One of the V-Power "C's" — owned by John F. Buckner and Sons, Cleburne, Texas — gets heaped load on highway job near Blue Ridge. LW 20-yd Fullpak® scraper loads fast because its low, wide bowl lets dirt flow-in easily, almost horizontally, with only a 2° rise to "climb". Result: More of your prime-mover-and-pusher power is used for cutting and pulling . . . less is wasted merely lifting dirt.

yards faster

"Plenty fast and really haul dirt," says W. C. Matthews, Superintendent for Frank C. Feutz Co., of Paris, Illinois, owner of two V-Power C 'Pulls. Operator Paul W. Knight adds, "This powerful scraper goes right through soft spots in 4th gear . . . has *all the power you could ask for!*"

*Trademark CP-2425-DCJ-2



Other profit-builders:



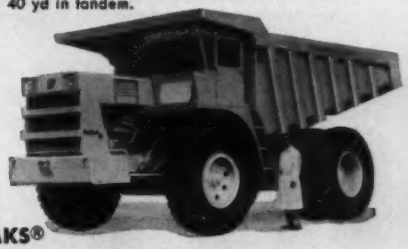
LW TOURNAPULLS

In addition to the 20-yd, 290-hp V-Power "C", other LW Tournapull-scrapers include: 29-yd, 430-hp "B", and 9-yd, 143-hp "D". Scrapers interchangeable with LW Rear-Dumps.



LW SPEEDPULL®

This 6-wheel prime-mover-scraper combination makes your long-haul jobs more profitable. 37.7 mph, 276 hp, 20 yd heaped capacity. 40 yd in tandem.



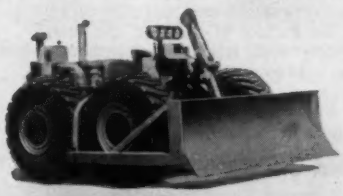
LW HAULPAKS®

Here's a hauler designed to earthmoving "specs", *not* automotive. 5 end-dump sizes 22 to 60 tons . . . up to 550 hp. 90-ton Haulpak bottom-dump also available.



LW GRADERS

7 sizes . . . there's one to fit your specific needs. 85 to 190 hp, including 2 torque-converter POWER-Flow® models.



LW TOURNATRACTOR®

Get more speed, mobility on tractor work with rubber-tired Tournatractor. 18.5 mph. 218 hp. Choice of electric or hydraulic blade control.

See LW Distributor for details.

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

Circle 143 on Reader Service Card

ALPHA

BETTER CONSTRUCTION THROUGH
BETTER USE OF CEMENTS

news and notes from the field

Modern Curing Methods Improve Concrete Quality

When cement is mixed with water it undergoes a chemical change that transforms it into "rock". When it hardens into a mass similar to rock, it is said to have hydrated. Therefore, hydration is nothing more than a chemical combination of cement and water. First, the outside of the cement particle hydrates and a cement gel (glue) is formed. As water continues to soak through this cement gel, further hydration takes place in the cement particle. The process of keeping the concrete damp and at about 70°F until it is strong enough to do the job for which it is intended is known as curing.

Importance of Curing

Curing consists of keeping the water necessary for forming the cement gel in the concrete and keeping the concrete at a temperature high enough or low enough so the chemical change to "rock" can take place.

For example, an average 6-bag mix using 1" aggregate can be expected to attain a strength of 3950 psi at 28 days if it is cured properly at 70°F. If the temperature is allowed to drop just 20° to 50°F, this same concrete will be slowed down in its transformation to rock and will have a strength of only 2400 psi. The same proportional differences can be expected at all ages. If during the curing period the concrete is allowed to dry out, such as may happen in hot weather, the chemical change stops right at the point where the concrete loses its moisture. Unfortunately, it is impossible to ever make the concrete good even though water is applied later.

Effect on Wearability

Since evaporation occurs more rapidly from the surface of concrete, the length of curing time is the most important factor affecting wearability. A surface that is moist cured for 28 days will result in a floor that is twice as hard as one that is protected only 3 days.

Effect on Watertightness

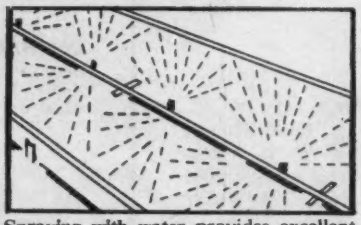
A well-proportioned and workable concrete mix generally contains about twice as much mixing water as is necessary for hydration of the cement. The reason is that about one-half of the water is used to make the concrete workable. As the cement and water hydrates, a gel is formed which expands to fill the voids left by the unneeded water as it evaporates from the concrete. If curing is stopped at one of the intermediate stages, the voids that are normally filled by the gel are left at whatever stage curing is stopped, making the concrete porous and leaky.

Effect on Durability

The durability or the ability of concrete to withstand the effects of freezing, thawing and weather conditions is a direct result of how much water the concrete can absorb. If the concrete quality is good to start with and if it has been cured properly, there will be no pores or capillaries through which water can enter and freeze, subsequently expanding and causing scaling.

Air entrainment helps eliminate deterioration caused by freezing and thawing cycles but good construction practices must also be followed—that means good curing.

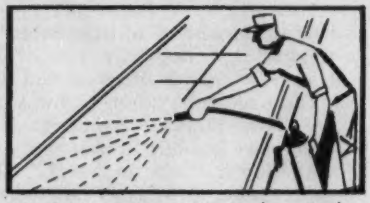
Methods of Curing



Spraying with water provides excellent results if constantly kept wet. There is a possibility of drying between sprinklings and it presents some difficulties on vertical walls.



Burlap which is kept damp during curing period. Recent improvements have made burlap easier to handle, improved light reflectance and increased its fire resistance.



Membrane compounds are inexpensive and easily applied by spraying. They are available clear, black and white. Caution must be taken that the film is not broken or tracked off before curing is completed.

Waterproof paper furnishes excellent protection against drying by providing a moisture barrier that assures proper hydration. Curing papers that are reinforced last longer, and can be reused several times.



Plastic sheets are absolutely water-tight, are light and easy to handle, and provide excellent protection. They resist rotting and mildew and can be reused many times.

Other curing methods include wet earth and sand which are messy and require excessive manpower. Straw and hay are only moderately efficient; they can dry out, blow away or burn.

Test specimens show that poorly cured concrete can easily lose 50 per cent of its potential strength. **And to ignore curing is the same as removing half the cement from a concrete mix.** It is much more economical to spend a few cents per square yard in proper curing, than to spend many dollars using excessive quantities of cement. And without curing, even high cement-factor concrete can be seriously damaged.

Reprints of this page are available on request.

ALPHA
PORTLAND CEMENT COMPANY
Alpha Building, Easton, Pa.

Circle 144 on Reader Service Card





No matter where you go

YOU'LL SEE MORE INGERSOLL-RAND

Scenes like this are a familiar sight on rock jobs everywhere—because more and more contractors insist on the CRAWL-IR—Gyro-Flo combination. Word gets around that Gyro-Flo powered CRAWL-IR drills are consistently setting the highest standards of performance and economy.

On the job shown above, five CRAWL-IR drills powered by three 900-cfm Gyro-Flo portables are removing rock for a new Interstate Highway in Massachusetts. Excellent breakage is obtained with a 9′ x 7′ pattern for holes from 10′ to 25′ deep, and 9′ x 8′ for holes from 25′ to 40′ deep.

The rugged, *fully mechanized* CRAWL-IR packs more power and gives more coverage at a single setup than any other machine in its class. And the smooth-running Gyro-Flo compressors stay on the job month after month with practically no attention or maintenance—start fast in the coldest weather, deliver dependable power all year 'round.

For further details on this cost-saving combination, see your I-R distributor or engineer.

Ingersoll-Rand

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A CONSTANT STANDARD OF QUALITY IN EVERYTHING YOU NEED FOR DRILLING ROCK

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TROJAN

Builds in "Extra" Strength with one-piece side frame construction

Trojan cuts the entire side frame from extra-heavy steel for maximum strength, durability, and operational simplicity . . . Obviously, this is a more costly operation; but the results are worth it! . . . The smooth, continuous contour completely eliminates the undercuts for bracket attachments necessary in ordinary built-up frame sections — therefore, eliminates the possible stress concentrations that lead to frame failure . . . This also allows complete protection *inside the frame* for fuel lines, wiring and hydraulic lines — shielded by a solid wall of steel from possible damage during rough work. This advanced Trojan technique means fewer parts and closer dimensional control — plus the elimination of potential trouble spots due to joining members that may not be of uniform strength . . . In addition, Trojan's unique "wide foot" design of frame connection adds rugged strength to the rear cradle supports. The frame is just another example of the extra care that goes into the construction of every Trojan — extra care that results in complete dependability on the job . . . Ask your Trojan distributor for a point-by-point inspection or an on the job demonstration of Trojan's seven-model line with lift capacities from 7,000 to 24,000 lbs.

AD NO. 44-33

TROJAN®
TRACTOR SHOVELS
YALE & TOWNE

THE YALE & TOWNE MANUFACTURING COMPANY
TROJAN DIVISION • BATAVIA, NEW YORK

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Highway Pavers Speed Concrete Placement for Bridge Abutment



STATIONED ON LEVEL GROUND NEAR ABUTMENT COFFERDAM, PAVER FILLS HOPPERS THAT FEED CONCRETE TO FORMS

It's not often that pavers pour bridge concrete, but when conditions are right they offer high production and close control.

HIGHWAY PAVERS ARE SPEEDING concrete placement for a bridge abutment job that requires the contractor to make high-volume, continuous pours.

Slattery Construction Corp. of Maspeth, N.Y., is using the pavers on the Alexander Hamilton Bridge in New York City. Slattery holds a $2.7-million contract to construct two arch abutments and seven approach-span piers.

The abutments are the toughest construction challenge. One abutment is a huge mass totaling about 10,000 yd of concrete, and the other takes about 6,000 yd. At the bottom of each, a 52x130-ft footing is keyed into rock by a series of steps.

Atop each footing, three massive pedestals that vary in height from 21 to 41 ft support a 32-ft-high concrete skewback that seats the four arch ribs of the 505-ft main span.

Cranes Pour One Abutment, Pavers the Other

Slattery completed the smaller abutment on the Manhattan side last winter. This abutment is dug into a steep slope above the river, and there is no level area around it on which to maneuver equipment. The contractor used cranes with a long reach to place concrete.

But there is level ground on each side of the cofferdam enclosing the Bronx abutment, and a good access road for trucks. This combination of circumstances gave the contractor an idea. Why not use pavers fed by dry-batch trucks?

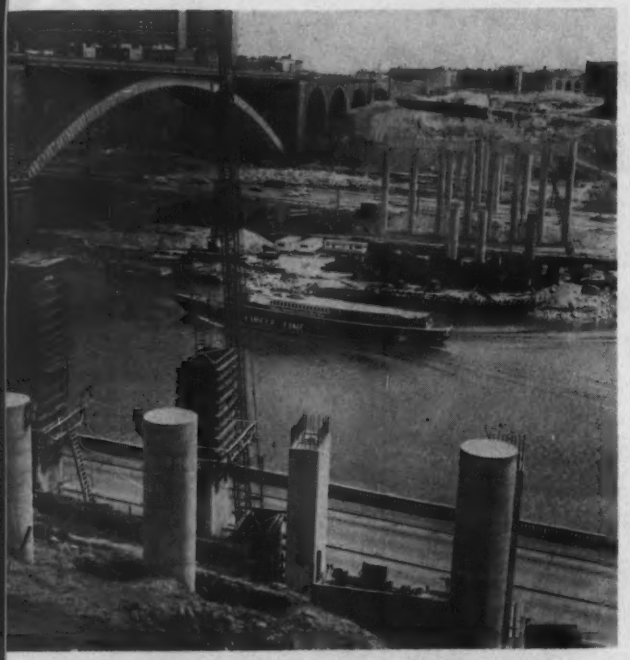
Pavers would offer good control of each pour and high production. The only question was whether they could reach far enough to handle placement. Slattery worked out a system of hoppers and tremies to transfer concrete from the paver bucket to the forms, and the show was ready to roll.

Slattery used one or two Koehring 34E pavers, depending on the size of the pour. When two pavers were used, they were spotted on opposite sides of the cofferdam. Ordinarily, each paver fed two hoppers. Within the 30-ft reach of each paver, the contractor placed two 8x8-ft hoppers atop the first level of cofferdam bracing. One side of each hopper was cut down about 1 ft to provide clearance for the paver bucket.

Each main hopper fed concrete to four 4x4-ft hoppers set atop the next lower level of bracing. A 15-in. elephant-trunk tremie made up of two 6-ft lengths chuted concrete from the upper to the lower level. Workmen at the lower level moved the flexible tremies from one hopper to another to cover the entire pour area. Tremies varying in diameter from 14 to 10 in. chuted concrete from the lower hoppers to the concrete crew below.

As pours reached the top of the cofferdam, the contractor dispensed with the lower level of hoppers. Then the crew placed concrete directly with the lengthened tremies of the upper hoppers.

The pavers cut pouring time considerably. Mixing 1½-yd batches, each paver averaged about 70 yd per hr. Two pavers completed the largest pour,



ON OTHER SIDE—Contractor forms shafts atop Manhattan abutment with preassembled panels, pours them in 36-ft lifts.

HIGHWAY PAVERS SPEED CONCRETE...
continued

totaling about 2,000 yd, in just 15 hr. On the other abutment, two cranes placed 1,300 yd in about 16 hr, but about half this volume was chuted into place directly from trucks.

Transit Mix Concrete Corp. supplied the batches. They kept 13 trucks rolling for each paver that was pouring. Trucks carried 5 to 8 batches. A crew of 28 men per shift handled concrete placement.

Concreting the Bronx abutment capped almost a full year of work in placing the cofferdam—the only one required on the job. Trouble cropped up several times but Slattery took it in stride.

The cofferdam measures 64x140 ft and varies in depth from 60 to 45 ft. A Northwest crawler crane with a 70-ft stick handling a McKiernan-Terry 9B3 hammer drove the Bethlehem ZP32 sheeting, which came in 35 to 60-ft lengths. A Lima crane teamed with the Northwest rig to handle excavation with 1-yd clamshells.

Boulders in the material caused trouble almost from the start. Besides making driving and excavating difficult, they caused excessive seepage beneath the sheeting, which in many places was not seated on rock.

After trying a chemical grout with only partial success, Slattery sealed the cofferdam by driving a second row of sheetpiling inside the first row in areas where the boulders made a gap between the sheeting and the rock.

The contractor drove this row of ZP37 L. B. Foster sheeting about 3 ft inside the cofferdam. Depth to rock varied from 2 to 14 ft. Driving was so hard that the crew had to do it in stages, digging out boulders at the toe by hand.

The double-wall of sheeting effectively sealed the cofferdam. An 8-in. and a 10-in. pump were sufficient to handle the remaining seepage.

Slattery's crew installed bracing at four levels as excavation in the cofferdam proceeded. Each level consists of heavy beams making six panels in one direction and three in the other.

In cutting the steps that seat the abutment in rock, Slattery limited blasts by using light charges. Workmen drilled holes with jackhammers. A crew of 50 men with picks and shovels cleaned up, loading battleship buckets handled by the Northwest crane.

After cutting 12 steps into the rock at the bottom of the cofferdam, Slattery next formed bulkheads to divide the abutment footing into three pours. A crew placed 24-ft-long, 12-in. WF soldier beams at 9-ft intervals at each bulkhead line. Horizontal 12x12-in. timber walers spanned between soldiers and held 3x10-in. sheeting.

The bulkhead forms followed the contour of the four steps cut across the width of the cofferdam at the bottom; on top they formed three steps. After pouring the sections at the ends of the footing, the contractor pulled the bulkhead forms and then poured the section in the middle.

The forming system for the pedestals atop the footing was essentially the same as that used for the bulkheads. Each of the three pedestals tapers in length from 48 ft at the base to about 38 ft at the top. Width of the pedestal at each end of the abutment is 14 ft; the pedestal at the center, which seats two arch ribs, is 36 ft wide. Four concrete columns about 7x12 ft in section rise from the top of each abutment to support the bridge deck at the ends of the main span.

Slattery has not yet completed concreting within the cofferdam on the Bronx side, but they are well above ground on the other side, concreting the shafts atop the Manhattan abutment. The contractor pours each of these four 69-ft-high columns in two lifts, using two levels of forms for each pour.

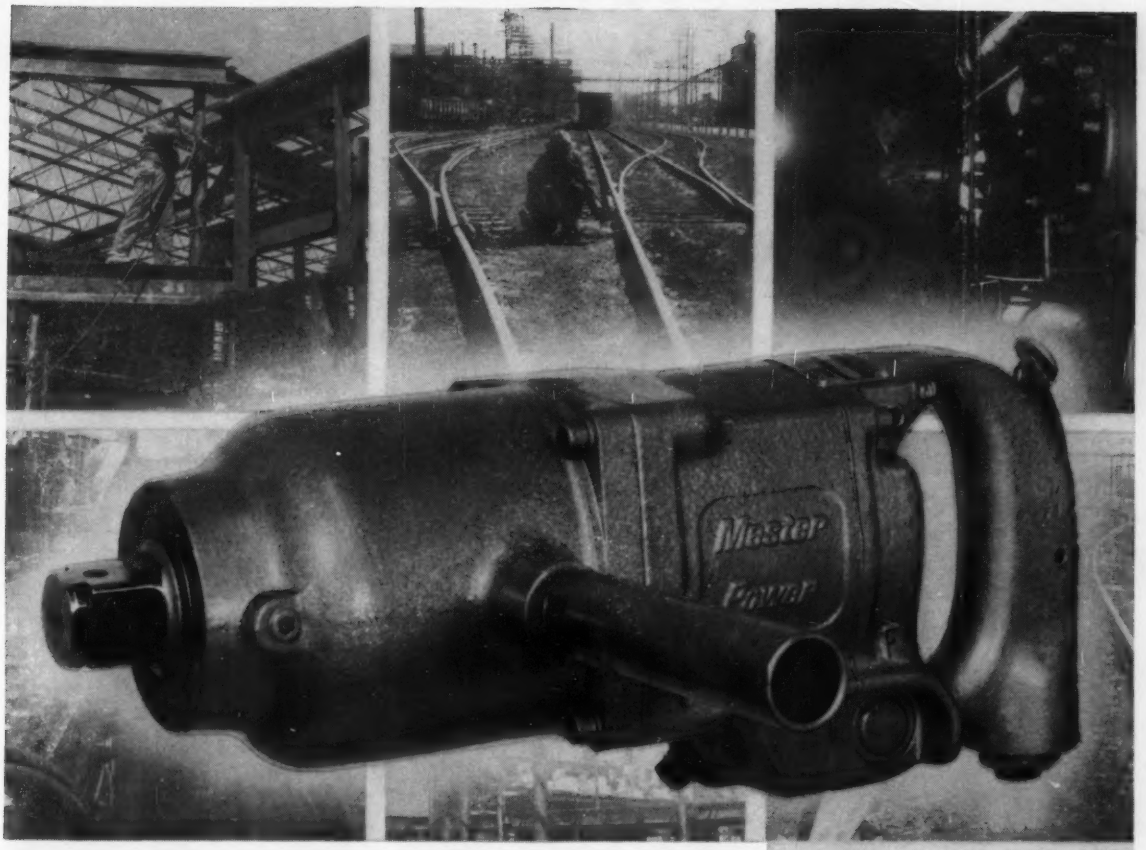
One form section is 20 ft high; the other, 16 ft high. Each is made up of four preassembled panels, one on each side of a column. Walers consist of double 3x10's on two opposite sides and double 6-in. ship channels on the other two sides. They are staggered at 2-ft, 8-in. centers. Backing up the ¾-in. plywood sheeting are 3x6-in. studs spaced on 8-in. centers. Ties are 1¼-in. Richmond Tyscrus at about 3-ft centers.

The contractor has built two sets of forms and alternates them between columns. It takes about 8 to 10 days for the complete cycle from forming to stripping, so they average about a pour per week.

Slattery expects to complete their part of the project this fall. Then American Bridge Division of U. S. Steel Corp. will move in to handle steel erection under a separate contract. The bridge will carry the Cross-Bronx Expressway across the Harlem River.

Men on the Job

John Saunders is general superintendent on the job for Slattery. Mario Capogrosso is superintendent. Jim McKeegan and Ralph Angarola are project engineers. Hardesty & Hanover and Andrews & Clarke, both consulting engineers of New York City, designed the bridge. Andrews and Clarke is supervising construction for the New York State Department of Public Works.



FEATURES OF THE ALL-NEW MASTER POWER 990 IMPACT WRENCH

- For 1¼" high-tensile bolts
- Weighs only 21 pounds
- New "roll-action" engages and disengages impact mechanism
- Popular, protected, push-type reverse valve
- Compact design gives greater maneuverability.
- Hardened, wear-resistant motor end-plates and liner.



NEW LIGHTWEIGHT CHAMP FOR HEAVY-DUTY WORK

This new Master Power 990 Impact Wrench went to work more than a year ago in shipyards, steel mills, rail yards, on off-the-road equipment, on steel erection and truck assembly. The toughest kind of work in the roughest environments. Our documented performance data is your proof that the new 990 delivers ultimate power, positive engagement, maximum life.

A combination of "roll action" and precision-engineered, cam-timed impact mechanism gives you a tool with no springs, no snap rings, no lost motion. The tried and proved ball-and-race principle of smooth, almost frictionless rolling action engages and disengages impacting blows with precise timing. The powerful air motor and clutch hammer are independently suspended on heavy-duty bearings. You get positive, full engagement regardless of power input. Result: A compact, light weight (21 lbs.) tool doing up to 1¼" high tensile bolting with less vibration, less torque to operator. Its simplified design permits assembly and disassembly with ordinary tools. Try this new tool *now!*

Ask your nearest Master Power distributor for a demonstration or write us for complete performance information.

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The popular Cedarapids Model 443 SENIOR COMMANDER

When the first Cedarapids Commander crushing and screening plant was designed, it was an immediate success for high-production, low-maintenance performance. Thousands upon thousands of tons later, the proven basic Commander design is still the most productive and profitable on the market. This is the design which has become the pattern for all portable front delivery tandem crusher plants in the new Cedarapids Commander Series line.

There's a profit-proved plant for your job in the

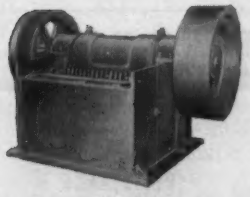
NEW CEDARAPIDS COMMANDER SERIES OF PORTABLE AGGREGATE PLANTS

● Now it's easier than ever to select the portable aggregate plant YOU need. Cedarapids has combined its broad line of front delivery tandem crusher plants into one *Commander Series* of 18 versatile models (some with semi-electric drives), from the Model 111 Pitmaster Commander to the Model 667 Master Commander. Capacities range from 50 tons per hour to 700 tons per hour.

Each of the 18 models is tailored to your particular needs through engineered variations in component sizes and types which can be combined as you wish to meet specifications in your local conditions. And best of all . . . in the Commander Series you'll find the plant that matches your equipment budget. Your Cedarapids Dealer has the details . . . see him today.

Continual improvements in proven basic Commander design and components give you these profit benefits

- 100% portability for quick moves. Horizontal screen always in operating position; nothing to raise, lower or adjust for traveling. Permanently mounted conveyors with self-cleaning pulleys speed set-up time. Optional third axle for large models to meet highway load limitations.
- High delivery discharge; no need to doze out driveway for big trucks.
- Easily accessible controls, centralized to give operator complete control and full visibility of all operations.
- Conveyors of the correct size and speed to handle high capacities without bottlenecks. Reinforced plant conveyor, self-cleaning pulleys, Iowa-built troughing rolls and idlers cut maintenance costs.
- Large, mono-rail return wheel easily handles high capacities. Adjustable paddles for handling different types of aggregate.



JAW CRUSHERS

Choose the size primary crusher you need, either Twin Jaw or Single Jaw types. Both have profit-boosting engineering improvements: Easy, simple hydraulic adjustment of discharge opening on large crusher sizes; heavy-duty pitman and side bearings set close together to prevent strain; extra-heavy eccentric shaft; extra-heavy flywheels; reinforced electric-welded bases, fully stress-relieved.



ROLL CRUSHERS

Designed to match high capacities of large screens and conveyors: Heavier than average bearings; exclusive feed design to utilize full width of rolls for crushing; higher speed operation (peripheral speed of roll, 500 fpm); patented shim adjustment quickly increases or decreases opening between rolls. Choose the roll crusher size you need to balance the output of the primary jaw crusher.



SCREENS

Cedarapids horizontal vibrating screens are engineered for extremely high capacity per square foot of screening area. You get up to 30% greater capacity than with an inclined screen of the same length. Check these bonus benefits: Snappy, lively action assures fast separation, prevents choking of crushers with screen carryover; fully stress-relieved screen boxes and frames; clamps hold screen wire tight, reduce screen cloth breakage.

Cedarapids PIZZER Built by IOWA

IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa

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US ANNOUNCES

WEATHERGARD

THE NEW, MORE DURABLE CONVEYOR BELT COVER

Now makes superior Ozone Resistance a Standard Feature of all U.S. Giant® Conveyor Belting

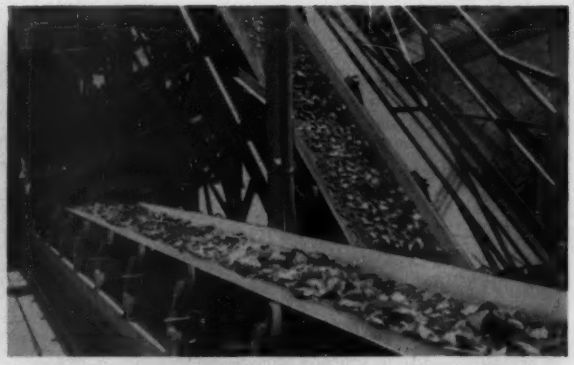
United States Rubber Company has achieved its position as the leading authority in Conveyor Belting through the many "firsts" it has made in this field. Now US brings another major development to Conveyor Belting—the WEATHERGARD cover.

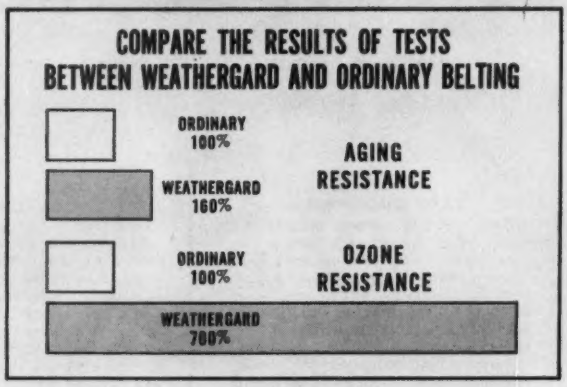
In recent tests, the new WeatherGard cover for Giant Conveyor Belting was subjected to seven times the ozone torture that causes ordinary belt covers to crack and, in turn, fail. The WeatherGard did not crack nor did it give any indication of cracking even after these exhaustive tests.

Further pointing out the toughness and durability of the WeatherGard were tests that showed it to have a substantially greater resistance to cracking from accelerated aging.

In addition, the WeatherGard cover resists damage from smog, sunlight, and weather checking. And . . . besides protecting against these factors that cause ordinary belts to fail, U.S. Giant with its WeatherGard cover is abrasion and wear resistant.

The new WeatherGard cover is standard on all U.S. Giant Conveyor Belting at no extra cost. See your US Representative or Distributor.





WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

United States Rubber

MECHANICAL GOODS DIVISION

Rockefeller Center, New York 20, N.Y.

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Simple Photoelectric Device Measures Land Areas Rapidly

This invention is so simple that it's a wonder no one thought of it before. Based on the principle of a light meter, it measures irregular areas such as cross-sections with more precision—and less labor—than a planimeter. Contractors may find it useful for a variety of quantity take-offs.

A CONSTRUCTION MAN and an inventor have teamed their talents to develop a device that promises to take much of the drudgery out of earthwork calculations.

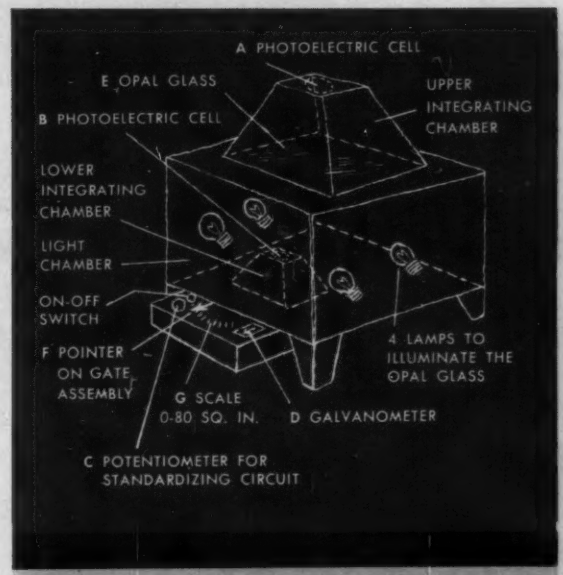
Their invention is a photoelectric integrator that measures the area of cross-sections or other irregular areas in a matter of seconds. The operator merely inserts in the machine a cut-out pattern of the area to be measured. Then he moves a pointer to get a direct reading of the area in square inches from a calibrated scale. The inventors claim that accuracy of the reading is within 1%.

Here's how the meeting of minds that produced the device came about. Allen Aronawitz, a project engineer with Spiniello Construction Co. of Newark, N. J., was fed up with time-consuming methods of finding the area of cross-sections. He had a hunch that a device working on the principle of a light meter would provide a faster method than stripping or using a planimeter. Arnowitz took the problem and his idea to A. T. Williams, a consulting engineer with years of experience in developing photoelectric devices. After months of labor, the two collaborators solved the problem.

The device they came up with looks simple. A 20x30-in. box houses the apparatus. It stands about 30 in. high and fits easily on a table. A hinged cover shaped like a truncated pyramid covers a plate of opal glass at the top of the box. The hinged cover contains a photoelectric cell that collects light from the opal glass screen. Four light bulbs inside the box illuminate the glass screen.

A similar but smaller chamber at the bottom of the box houses a second photoelectric cell. A single lamp illuminates the glass screen that diffuses light to this cell. A gate between the lamp and the cell controls illumination.

continued on next page

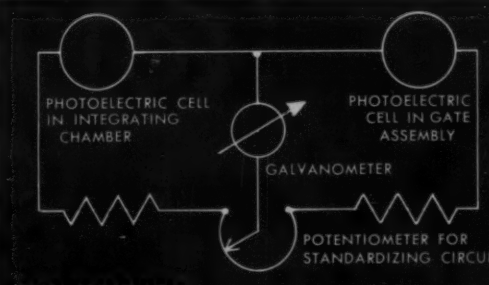


Here's How It Works

Two photo-electric cells (A and B) — one in each integrating chamber — are the nerves of the device. Each cell generates electrical current in proportion to the illumination falling on it. The cells are connected in an electrically balanced circuit.

The potentiometer (C) balances the circuit initially. The galvanometer (D) then reads zero. When the operator places a pattern cut out of black paper on the glass screen (E) at the top of the box, the circuit is thrown out of balance because the upper photo-electric cell produces less current.

To balance the circuit, the operator reduces the illumination in the lower chamber by moving its gate assembly until the galvanometer again reads zero. A pointer on the gate assembly (F) moves over a scale (G) calibrated in square inches and gives a direct reading of the area of the pattern.



CIRCUIT IS SIMPLE—Two photo-electric cells are connected in a common electrical system similar to a Wheatstone bridge. Circuit contains a constant resistance on each side of bridge, galvanometer, and potentiometer to standardize the circuit.

The photoelectric cells are connected in a series in an electrical circuit that contains a galvanometer for balancing. When the light falling on the cell in the upper chamber is reduced by an obstruction such as a piece of black paper placed on the glass screen, the cell produces less current and throws the circuit out of balance.

The illumination in the lower chamber must be reduced by a corresponding amount to balance the circuit. The gate assembly of the lower chamber does this. The change in current produced by the lower cell is directly proportional to the area of the piece of black paper. A pointer on the gate assembly measures the area on a scale calibrated in square inches.

Tracing Is Necessary

Cutting out the pattern is the most time-consuming step in using the recorder. A tracing of the area to be measured must be transferred to black matte paper by means of orange carbon paper placed beneath the original drawing and on top of the black paper. Then the operator cuts out the tracing — the machine does the rest.

Before lighting the lamps, the galvanometer must be checked to be sure that its pointer is on the zero line. If it is not, it can be corrected by rotating a knob at the top of the housing. He then plugs the unit into an ordinary 120-v, 60-cycle power line and turns the lamps on by a toggle switch on the left side of the panel.

When the lamps have warmed up for about 5 min, the operator standardizes the integrator (balances the circuit) by turning the potentiometer knob until the galvanometer reads zero. Now the integrator is ready to measure areas.

The operator swings up the hinged chamber at the top of the box and places the cut-out black paper pattern on the glass screen. Then he closes the upper chamber and moves the pointer on the gate assembly of the lower chamber until the galvanometer again reads zero. He then reads the scale, which is calibrated from 0 to 80 sq. in., to find the area of the pattern.

It's simply a matter of arithmetic to convert the area in square inches to square feet or square yards, using the scale of the original drawing.

Working on New Model

So far, the prototype model has proven useful on the project that idea-man Aronawitz currently is working on. The job is a berthing dock being built for Union Carbide Corp. at Perth Amboy, N. J. Besides simplifying the calculation of earthwork for site grading, the integrator measured irregularly shaped areas that were later paved with asphalt. Calculation of the areas by geometric methods checked the results of the integrator within 1%.

Aronawitz and Williams have a patent pending on the recorder, and they hope to have it on the market soon. They also are working on a table model that will incorporate several changes. The two chambers will be separated and built into the top of a table. A wheel or knob geared to the pointer will permit more accurate reading of the gage.



banks on dependability of heavy-duty **WISCONSIN**

Savvy by *Drott* and power by *Wisconsin* enable you to handle irregular objects—and to cut costs with every move of the *Go-Devil*. The unit lifts, telescopes, and swings loads with fingertip ease—hauls them under its own power — and eliminates re-handling.

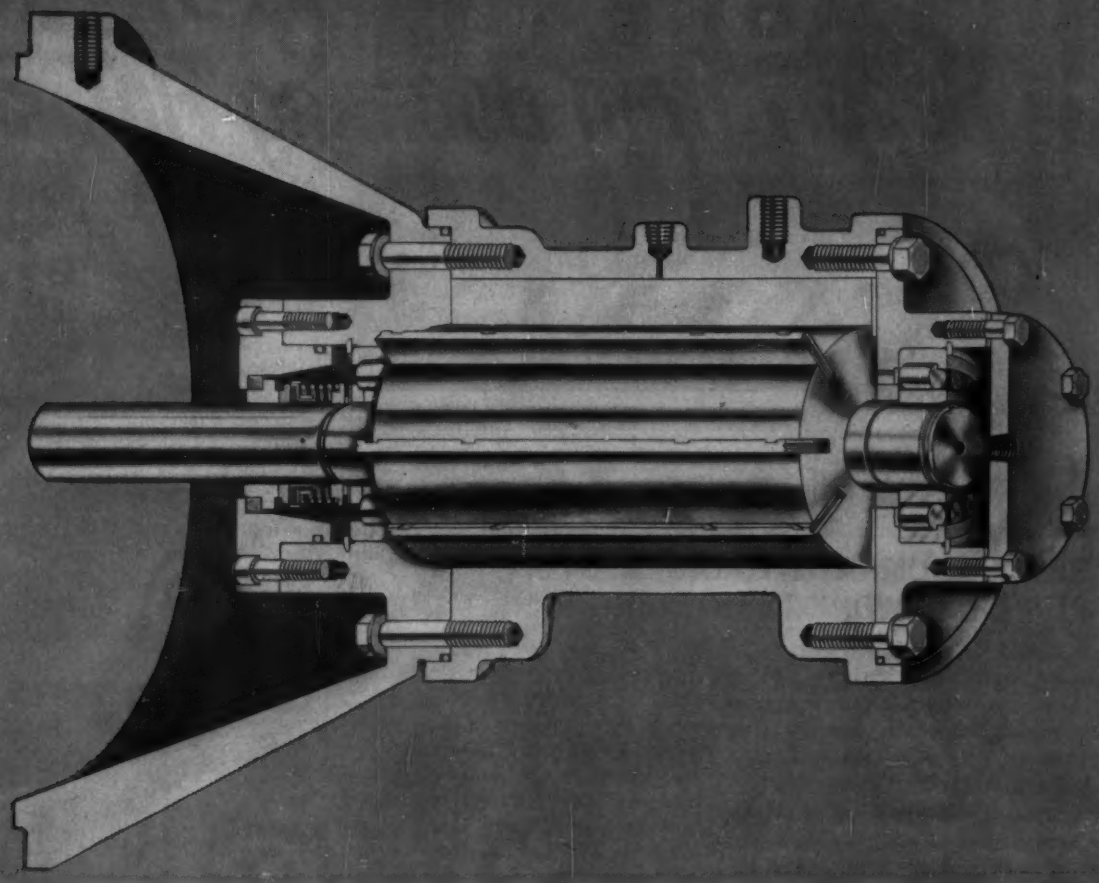
Drott picked the two-cylinder 18-hp Wisconsin for its *"proven dependability"* in heavy-duty service. The THD provides power for the hydraulically-operated telescopic rotating boom. Its high torque assures safe lifting of heavy objects — and the hauling of two-ton loads up 20% grades without stalling.

The Wisconsin is precision-built for long life and ready availability. Tapered roller main bearings absorb thrusts. Stellite exhaust valves and seats and rotators extend valve life up to 500%! It's air-cooled, so you can count on it in sub-zero cold or 140°F. heat. Servicing is simpler, too.

Keep your materials moving — with equipment powered by heavy-duty Wisconsin Engines, 3 to 56 hp. Get Bulletin S-249. Write Dept. C-31.

WISCONSIN MOTOR CORPORATION
MILWAUKEE 46, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines
Circle 154 on Reader Service Card

WORTHINGTON COMPRESSOR NEWS:



NEW MONO-ROTOR INTRODUCED IN 85′, 125′ AND 250′ MODELS

Now Worthington introduces the new Mono-Rotor Blue Brute compressor—a significant step ahead in improving compressor performance. The Mono-Rotor introduction follows six full years of development and field testing. It can be ordered immediately in the most commonly used sizes.

The major feature of the Mono-Rotor design is its extremely simple, dependable construction. The Mono-Rotor is built with just one stage . . . just one rotor . . . just two bearings . . . no gears . . . oil pump.



NEW 125′ MONO-ROTOR COMPRESSOR

It is simpler in construction than any two stage compressor or any screw type compressor. This simple construction is the basis of its high degree of reliability.

How reliable is the Mono-Rotor? Its reliability is so great that Worthington has quadrupled its warranty period. The standard warranty agreement has been extended from the usual 90 days to one full year. Worthington is the first compressor manufacturer supplying the construction industry to do so.

What makes the new Mono-Rotor design so successful? It is the new Worthington-developed rotor-to-cylinder sealing. For over ten years the industry has attempted to solve this problem for larger compressor sizes. Two-stage construction was the solution until Worthington developed new methods of oil distribution within the cylinder. Now an efficient, dependable air supply is available in just one stage—one rotor construction.

The new Worthington Mono-Rotor units have other benefits, too. They are 20% lighter in weight and are designed for improved towing and tracking. The third wheel is standard equipment for easier handling on the job. There is an engine-saving clutch and many other features.

The Mono-Rotor Blue Brute can now be ordered in the 85′, 125′ and 250′ sizes. See it . . . rent it . . . or buy it at your Worthington dealer listed in the Yellow Pages under "Compressors." Or write Worthington Corporation, Dept. 60-37, Holyoke, Mass. In Canada: Worthington (Canada) Ltd., Brantford, Ontario.

WORTHINGTON

PRODUCTS THAT WORK FOR YOUR PROFIT

Circle 155 *on Reader Service Card*

Report from Booming Florida:



REVOLUTIONARY HYDRAULIC SYSTEM, RIPPER AT WORK IN DOWLING PARK MINE

A Euclid C-6, equipped with a Gar Wood double-shank ripper, dozer blade, and Variacs hydraulic system is mining limestone near Dowling Park for use as a subbase in Florida highway and railroad construction.

The equipment is owned by Craggs Equipment Company of Ocala and Gainesville, doing business as the Williston Shell Rock Company.

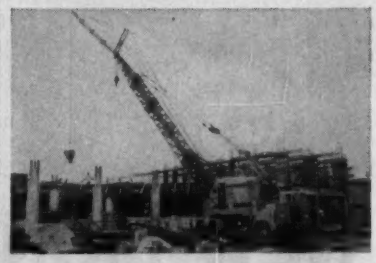
Superintendent of the job, Burt Davis, is particularly enthusiastic about Gar Wood's revolutionary Variacs hydraulic system. Its variable volume piston pump delivers oil *only* when there's a job to be done. It allows the operator to meter tractor horsepower to the requirements of both blade and crawlers, thus saving both horsepower and fuel. Because Variacs works less and works easier, it has a far longer working life. Heat build-up is virtually eliminated, and both lifting power and blade speed are greatly increased.

Gar Wood Truck Cranes Are on the Job in Ft. Lauderdale

A pair of Gar Wood truck cranes are getting a thorough workout in bustling Fort Lauderdale. They are owned by the R.E.W. Corp., a crane rental company.

Says Karl A. Goodbread, Manager and Vice President: "When lifting, or reaching out with a load, our Gar Wood cranes are much better than competitive units, and they require far less maintenance. We depend on them for our heaviest jobs."

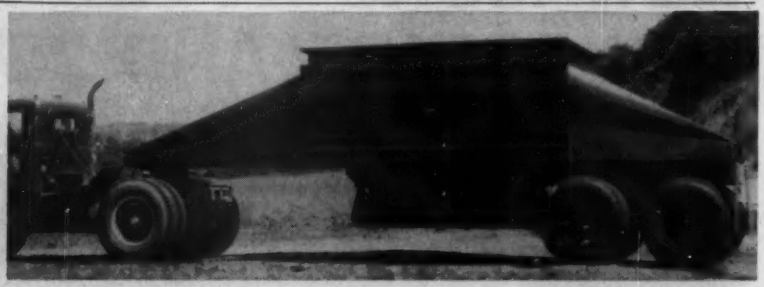
Gar Wood truck cranes are engineered to combine the smoothest, strongest flow of power with extremely accurate control—a combination vital in today's precision crane-boom work.



GAR WOOD DUMP HAULS SCREENINGS IN MIAMI



A truck equipped with a new 12-cubic-yard Gar Wood dump body is being used by Maule Industries, Inc., of Miami, to haul screenings to a processing plant. Gar Wood is the world's largest producer of dump bodies and hoists, offers today's most complete line of equipment.



LEGAL PAYLOADS INCREASED TO 26 TONS IN FLORIDA WITH ALL-STEEL GAR WOOD HOPPERS

Florida contractors can now legally haul 26 tons of payload by using a Gar Wood semitrailer with a single axle tractor.

This payload increase is possible because Gar Wood has eliminated the dead weight of conventional truss-frame construction. Gar Wood's exclusive Mono-Shell hopper design greatly reduces tare weight, and Gar Wood's mounting techniques distribute more load over a much greater axle span.

Gar Wood all-steel, Mono-Shell hopper trailers are available in a wide range of open and enclosed models for train and semitrailer operation, with a choice of seven types of discharge gates for every hauling need.

GAR WOOD'S AT WORK!



GAR WOOD-BUCKEYE 315, owned by the city of Miami, cuts through coral rock for a six-inch water main. Note clean sides of ditch, precise placement of spoil pile.

Miami Standardizes on Buckeye Ditchers to Cut Through Solid Coral

Whether you call it coral rock, keystone coral or Florida lime—it's hard—and it comprises 60% of the Miami terrain. Ditching through solid coral can wear out a set of rooter bits in a single day. This is *really* tough ditching, and to do it the city of Miami has gone exclusively Gar Wood-Buckeye.

Miami owns 10 Buckeyes. According to John Layton, Maintenance Foreman for the Miami Water Board, "Buckeyes are by far the best ditchers for cutting through solid coral. And they are the best *all-around* ditching machines we have ever used."

Another reason Buckeyes have proven superior in Miami is low maintenance. "Coral rock is plenty punishing," says Layton, "but it hasn't stopped our Buckeyes. They continually ditch at top-notch efficiency. And they require less maintenance than any other ditchers we've ever tried."

Buckeye ditchers are the most modern on the market. Every major engineering development in ditching for the last 68 years has been found first on Buckeye ditchers. Today Gar Wood continues to set standards in the field—giving contractors and municipalities across the country high production, low maintenance, and long, trouble-free operation.

Miami Beach Keeps Clean with Gar Wood Load-Packers

With several million visitors arriving each season, and with a reputation for beauty to maintain, Miami Beach is demanding in its refuse collection requirements. To find the best machine for the job, the city tried and tested several competitive packers. The result: Miami Beach chose the Gar Wood Load-Packer exclusively, and now operates a fleet of 33 units.

Maximum loads and low operating costs were the reasons behind the choice, city officials state. The Load-Packer has the biggest hopper of any 16-yard packing machine, carries the biggest loads because dead weight has been cut to a minimum. And since the Load-Packer packs faster than any competitive machine, each crew can work a longer route.



GAR WOOD INDUSTRIES, INC.
Wayne, Michigan
Findlay, Ohio

Circle 157 on Reader Service Card



DISTRIBUTOR DAN, the SKF bearing man, says "TO SHRINK A BEARING ONTO A SHAFT GIVE IT A BATH IN HOT OIL"



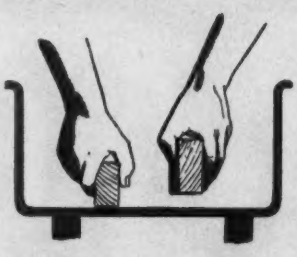
WHY HEAT IT, ANYWAY? If you need an interference fit, it's often convenient to shrink the inner race onto the shaft. To do this, you need to establish a difference in temperature. And it's usually easier to heat and expand the bearing than to cool the shaft.



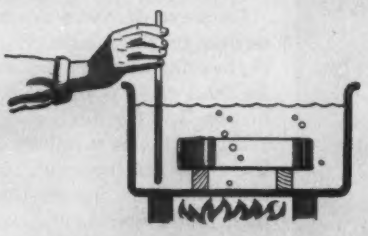
SOME DO'S AND DON'TS. To heat the bearing, immerse it in hot oil. **Don't** heat the bearing over a flame. And **don't** heat it above 225°F. Plan to use enough oil—either quenching oil that has a minimum flash point of 300°F. or transformer oil.



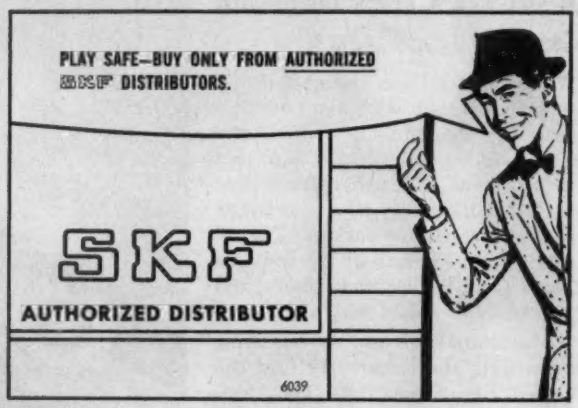
CLEAN THE CONTAINER FIRST. If you reuse oil, make sure it's absolutely clean by filtering it carefully. Again, use plenty of oil—because too little may heat and cool too rapidly, causing the bearing to heat unevenly.



ANOTHER "HOT" TIP. Place a rack at the bottom of the container and set the bearing on it. This will prevent the bearing from touching the hot bottom. It will also separate the bearing from any contamination that may have settled on the bottom.



TO HEAT BEARING UNIFORMLY, place it in the bath as soon as heating starts. Or else allow sufficient time for entire bearing to reach temperature. Stir oil and heat at 200°F. for 15 minutes. Check temperature by immersing a thermometer near bearing.



SKF MOTION ENGINEERING

Advanced ball and roller bearing technology

Circle 158 on Reader Service Card



Unretouched photo of concrete barrier taken last spring following a severe winter.



White concrete center barriers: new safety for existing roads

This concrete center barrier on Route U.S. 46, New Jersey, has been successful in preventing head-on collisions on this heavily traveled approach to the George Washington Bridge. Cast in place with ATLAS WHITE portland cement, the barrier is 32 inches high, 24 inches wide at the base, with sloping sides. This design minimizes the possibility of vehicles mounting the barrier and helps shield oncoming headlights. This construction has become an important feature in New Jersey's program to build safety into existing highways where the installation of center islands is impractical.

ATLAS WHITE air-entraining portland cement was specified for the concrete in this installation because its uniform whiteness provided contrast between barrier and the darker pavement. And at night, this contrast is even more apparent. In addition, the air-entraining property of this cement also provides a more durable concrete that resists the destructive effects of freezing-thawing weather and the application of deicing salts. For more information on white portland cement, write Universal Atlas, 100 Park Avenue, New York 17, New York.

OFFICES: Albany • Birmingham • Boston • Chicago • Dayton • Kansas City • Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh • St. Louis • Waco

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Universal Atlas Cement
Division of
United States Steel

USS



"HALF-SECOND" TURN AROUND PUTS DUMPTOR® YARDS AHEAD ON EVERY SHIFT

The waste motion and lost time of turn around operation is a thing of the past. Dumptor turn-time clocks out at a half second. And not a wheel moves!

Pivoting seat, dual-controls, and 24 mph traveling speed in both directions is the key to Dumptor's bonus hauling operation. The driver merely swings his own weight around, takes the "extra" set of controls in hand, and shuttles off. Think of the time saved and yardage gained.

Sit down, pivot 'round, and take the Dumptor controls at your nearest Koehring Distributor today.



CARRIES 30,000 lbs.! Model 100 Dumptor, 15-ton capacity, has big 10' x 10' square body designed to self-center material — assures full, heaped loads on every trip. Instantaneous or controlled gravity dump. Model 60 Dumptor, an 8-ton hauler, has dual controls and all the timesaving features of the Model 100.

WHERE THERE'S NO ROOM OR TIME TO TURN

DUMPTOR OUTHAULS ALL OTHERS . . .

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KOEHRING

DIVISION OF KOEHRING COMPANY

Milwaukee 16, Wisconsin

Circle 160 on Reader Service Card

Sales and Service

Equipment purchasing and servicing takes less time when you know who and where to call. Keep advised of new distributors, sales personnel and other activities.

Distributor Appointments

Baldwin - Lima - Hamilton Corp: The Construction Equipment Div. has appointed the following distributors: J&H Equipment Co., Wilmington, Ohio, for sections of Ohio and Kentucky; Flesch-Miller Tractor Co., Indianapolis, for most of Indiana; Machinery Supply, Inc., Stockton, for central California; Euclid-Knoxville, Inc., Knoxville, for eastern Tennessee and northwest Georgia; Southern Equipment Co., Inc., Marietta, for all but four counties in Georgia; Euclid-Kentucky, Inc., Louisville, for most of Kentucky; and Euclid-Mississippi, Inc., Jackson, for southern Mississippi.

The Eimco Corp.: The following dealers will handle the Eimco line of crawler tractor equipment: Robert P. Stapp Machinery Co., Birmingham, for Alabama; Lake Shore, Inc., of Iron Mountain, Mich. and Duluth, Minn., for sales and service within these surrounding areas; H.C. Ormes Equipment Co., Minneapolis; and Andrews Machinery Co., Seattle.

Harnischfeger: Mooney Tractor & Equipment Corp., Milwaukee, has been named dealer for P&H equipment for the state of Wisconsin.

Highway Equipment Co.: Fray Equipment Co., Inc., Seattle, has been appointed distributor for 14 Washington counties.

Osborne Electric Co.: Graybar Electric Co., Inc., with 135 U.S. distributor outlets, has been appointed distributor for two-way radio communication equipment.

Koehring Co.: Harris Truck & Equipment Co., Trementon, Utah, has been appointed a distributor by the Koehring, Parsons, and Koehring Co. of California divisions. The Kwik Mix Div. has named Paynter Equipment Co., Green Bay, distributor for the



Nestle your head inside the balance-perfect, adjustable headband of a GenTex Safety Hat. The lightweight, rugged GenTex is protection-plus against impact, penetration, dielectric shock. It will not peel, crack or chip. Choose from 9 colors for appearance and instant job classification. The 6 point suspension system headband (same principle in Jet Pilot helmets) snaps in, has fingertip control and is fully washable. Brim and peaked cap models. For full particulars write to the GenTex Corporation, 450 7th Avenue, New York 1.



GENTEX® SAFETY HATS
another quality product
by the GenTex Corporation

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"5,000,000 YARDS WITHOUT BEARING REPLACEMENTS, THANKS TO LUBRIPLATE"

Says— WITTLE CONTRACTING CO. of Dallas, Tex.

"We operated this Koehring 1205 drag line in dirt and muck six days a week for over 15,000 hours. Sure we're happy . . . no down time at all for replacement of bearings, bushings or gears. We used LUBRIPLATE Lubrication throughout."

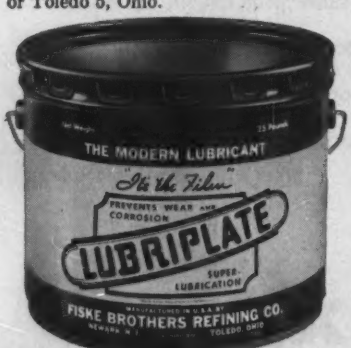
T. A. GARWITZ
Construction Superintendent

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose . . . LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.



For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.



Circle 162 on Reader Service Card

SALES AND SERVICE . . . *continued*

northern half of Wisconsin and the upper peninsula of Michigan. The Koehring Div. has appointed Carroll & Edwards Co., Cincinnati, a distributor for southeastern Ohio.

McKiernan-Terry Corp.: E.H. Kliebenstein Co., Ridgefield, has been appointed northern New Jersey sales and service representative.

Parker-Hannifin Corp.: Cummins Diesel of Northern Ohio, Inc., Cleveland, has been named a distributor for Parker hose and fittings.

On the Sales Front

Bucyrus-Erie Co.: Howard Freyensee has been named general products sales manager, and Robert P. Brooks has been appointed large machine sales manager.

Davey Compressor Co.: Thomas A. Whyte has been named manager of the service and parts department.

The Master Builders Co.: Raymond H. Deemer has been appointed a sales-service representative for the Dayton territory.

Barber-Greene Co.: James H. Rice is new product and marketing coordinator; James E. Gleason has been appointed manager of the Conveyor Div. Philip J. Hanson is manager of the Industrial Applications Div.; and Richard C. Graffagna has been named manager, dealer conveyor marketing.

Owatonna Tool Co.: The following appointments have been made: R.N. Cunningham as sales engineer for the Precision Hydraulics Div.; Arthur Kreager as district sales manager for West Virginia and western Pennsylvania; James Rainey as district sales manager for all of Illinois except Chicago.

The Ridge Tool Co.: Paul Selby has been named salesman for Quebec and the Maritime Provinces. Mefaro Martinez is sales representative for Latin America.

L.B. Foster Co.: G.W. Campbell has been appointed sales representative in the Houston office.

NF

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NEENAH

and the products are GRAY and DUCTILE IRON CONSTRUCTION CASTINGS of finest QUALITY FINISH UNIFORMITY



Delivery is prompt: we have huge on-hand stocks of standard items

PLUS

15,000 patterns

PLUS

a daily production capacity of 500 tons in our two plants.

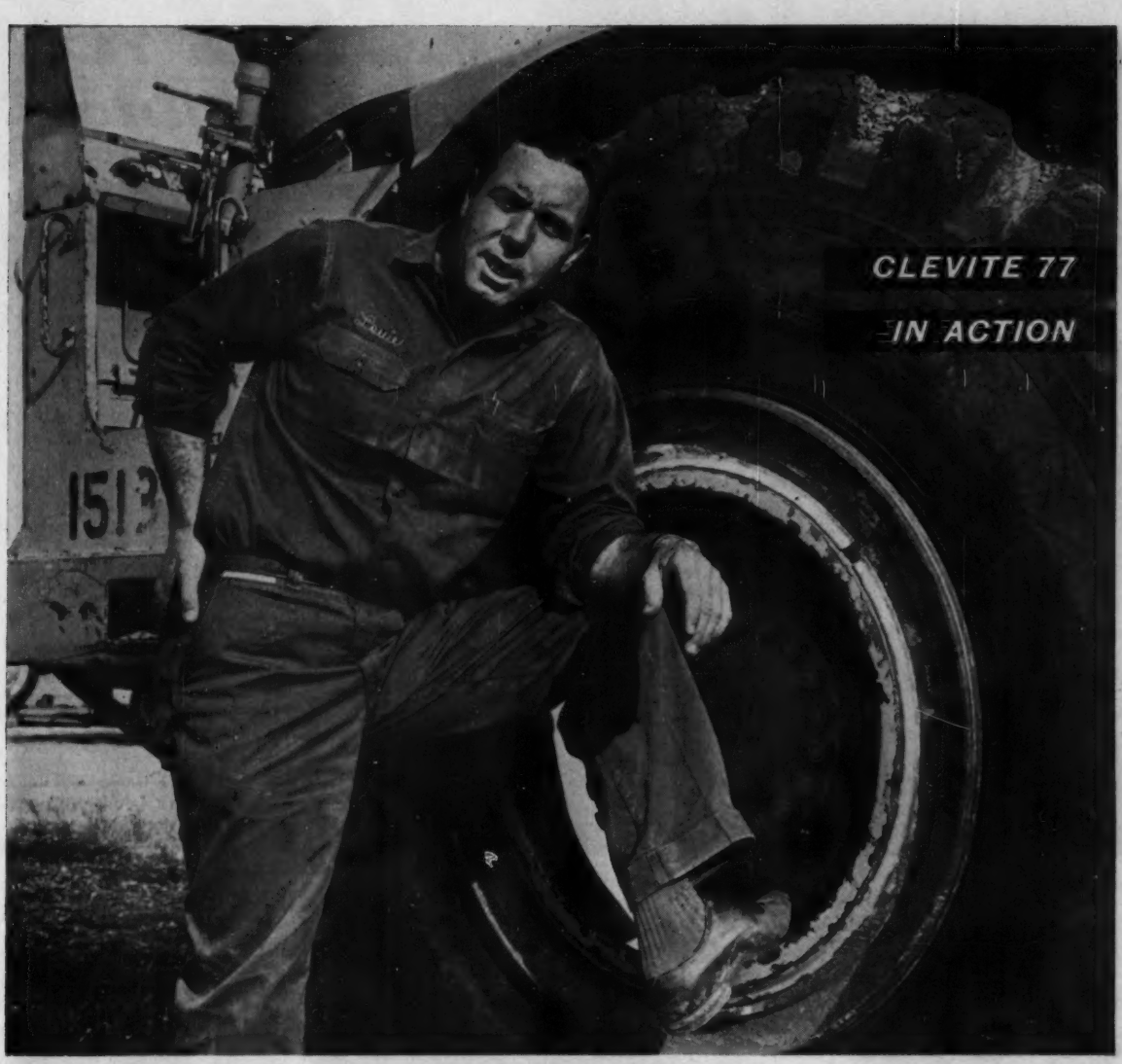


Name's Neenah . . . if we make it it's a casting . . . and the best.

New 168-page catalog shows our line. It's sent promptly when requested.

NEENAH FOUNDRY COMPANY
NEENAH • WISCONSIN
Chicago Office
5445 North Neva Ave., Chicago 31, Ill.

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"Clevite 77 keeps my equipment on the job longer...

. . . because we don't have to replace Clevite 77 between major overhauls." Louie Ross knows his bearings. That's why he uses Clevite bearings to keep more than 100 pieces of equipment operating.

says Louie Ross
Maintenance Superintendent
G. C. McBride, Inc.
Waco, Texas

Ask your NAPA jobber for the new, illustrated catalog of aluminum bearings for Caterpillar equipment. He has the complete line and the service to help you do a better, faster job.

NAPA
National Automotive Parts Association
Assurance of Quality



MONMOUTH *Engine Bearings*

CLEVITE SERVICE: Cleveland Graphite Bronze • *Division of Clevite Corporation* • Cleveland 3, Ohio

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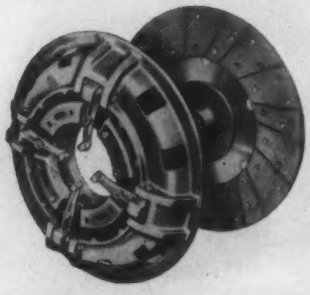
Get Long-Time Positive Action with LIPE TC Constant Capacity Clutch



Full torque capacity for the entire life of the friction material! The TC non-adjustable, spring loaded, dry-plate clutch compensates for fading pressure of expanding springs. The toggle linkage maintains full pressure . . . smooth, chatter-free engagement.

A massive plate, finned for rapid radiation, is cooled by effective currents of air, preserving friction material. Inner cooling protects chrome silicon springs from overheating, loss of temper.

Simple to maintain: No expensive tear downs for part replacement. Automatically compensated pressure eliminates frequent adjustments: Less down time, longer life and lower overall cost per hour. That's why . . . *the trend is to* LIPE!



● *Write for full information on Lipe TC Clutches. Available in 15½" and 17" single- and two-plate types—torque capacity range of 400 to 4000 ft.-lbs.*

Lipe-Rollway Corporation
Syracuse 1, N.Y.

Circle 164 on Reader Service Card

SALES AND SERVICE . . .
continued

Clayton Mfg. Co.: Paul Moore is district manager for the Pittsburgh - Cleveland - Buffalo area with headquarters in Pittsburgh. William B. Stoehr is district manager for southern California and Arizona.

Stanco Mfgs. & Sales, Inc.: William S. Gaskill has been appointed general sales manager and will be responsible for sales of Stanco's line of Flygt submersible electric pumps.

R. G. LeTourneau, Inc.: Howard W. Dennison has been appointed factory sales representative for southern California, Arizona, and New Mexico.

Worthington Corp.: Robert J. Tumlinson has been named a distribution representative by the construction equipment sales organization for northern Texas, Oklahoma, and New Mexico. John M. Daugherty is special representative for the construction equipment div. A specialist in rock excavation, he will handle sale of Worthington's equipment line in the Midwest and West.

United Shoe Machinery Corp.: The Pop Rivet Div. has named the following district representatives: Carlyle Abbott, Detroit; Thomas R. Freeman, Kansas City, Mo.; and Ned B. Turner, Dallas.

H.O. Penn Machinery Co.: Raymond W. Lawton, Jr., has been named salesman for Nassau County, New York.

The Union Metal Mfg. Co.: Kenneth C. Dorland has been appointed general sales manager.

Hewitt-Robins, Inc.: J.E. Stone is manager of the Cleveland district, which includes Toledo, Youngstown, Columbus, Dayton, and Cincinnati. R.S. Schuba has been named manager of the Detroit district that also covers Lansing, Flint, Saginaw, Grand Rapids, Kalamazoo, and South Bend.

Special Mention

Allis-Chalmers Mfg. Co.: A new training center for A-C construction machinery dealers' service personnel has been completed at Springfield, Ill.

Get them back on the job faster with
GRACO HYDRA-CLEAN





● Clean equipment not only looks better, but is easier to repair and maintain. When your equipment is in the shop for overhaul or inspection clean it *first* with Graco Hydra-Clean, the air-powered washer that gets all the dirt . . . even in deep crevices. Then watch how much easier and *faster* it is to find and repair equipment deficiencies.

For information on timesaving Graco Hydra-Clean or Lubrication equipment see your nearest Graco distributor or write:

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ENGINEERS AND MANUFACTURERS

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646 Graco Square
Minneapolis 13, Minnesota

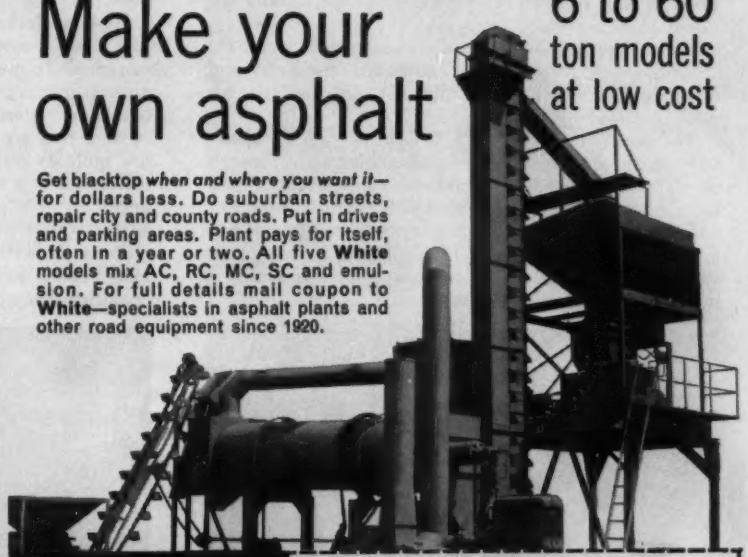
See Phone Book Yellow Pages "Lubricating Equipment" for Graco Suppliers

Circle 165 on Reader Service Card

Make your own asphalt

6 to 60 ton models at low cost

Get blacktop *when and where you want it*—for dollars less. Do suburban streets, repair city and county roads. Put in drives and parking areas. Plant pays for itself, often in a year or two. All five **White** models mix AC, RC, MC, SC and emulsion. For full details mail coupon to **White**—specialists in asphalt plants and other road equipment since 1920.



White asphalt plants

White Mfg. Co., Elkhart 6, Indiana
Please send catalogs on low-cost asphalt plants.

Name_____

Address_____

City_____ State_____

Circle 261 on Reader Service Card

Building specialization puts The Company in $13 million bracket

One of New England's outstanding builders of industrial, commercial and school building projects is The E & F Construction Company of Bridgeport, Connecticut. This firm has a long, outstanding history which dates back to the early 1920s. At that time, Mr. Philip Epifano and Fred Frassinelli formed a partnership. The background of the founders was in masonry construction and in the early days they engaged primarily in concrete foundation work. After the partners joined forces and incorporated in 1925, they began bidding on industrial and commercial building projects. By 1927, they had landed their first million dollar contract. This was the first of what was to become many school building projects.

By 1929, the company had grown and prospered. It was at this point that they began to build their own equipment inventory to meet mounting needs for their diversified types of construction. They established a policy of modernization and replacement of equipment as it was needed. This policy still guides the purchase of equipment the company needs.

Sons join company—it prospers and grows

By 1939, C. Philip Epifano joined the company. As a graduate engineer he was well trained and qualified for work in building construction. By 1943, Fred Frassinelli Jr. joined the organization. His architectural training and background also added to the strength of the company. By 1950, the sons of the founders were made officers. Today Philip Epifano is Vice President and Fred Frassinelli Jr. is Secretary-Treasurer. The senior Epifano is still President and heads up the management team. He actively participates in the company's operation and direction. The senior Frassinelli is now deceased, but his work is carried on by his son, Fred Jr.

The principals of The E & F Construction Company have moulded a well-knit, efficient organization through careful planning and know-how. This is reflected in their construction volume for 1960 which reached a total of $13 million of completed building work. In the past five years, E & F has completed $57 million of building construction. And most of the company's work is within a radius of 40 miles of Bridgeport.

Employs large inventory of equipment

The magnitude and scope of this contractor's operations is also reflected in the large number of people in its employ. The company grew from a small crew of a few men in the early 20's to some 300 steady employees and as many as 600 workers when they are going at full capacity. As it stands today, E & F is basically a company of young men. Wherever possible, emphasis is on promotion from within.

Of the total volume of building construction done by The E & F Construction Company, much of it is done by their own work force. They do their own excavating, grading, form work, concrete, masonry, plastering and carpentry. That's why such a variety of equipment is required and owned by a building contractor of E & F's size. (Equipment inventory is shown at the right.) Although they are strictly builders, E & F management has learned that it is necessary and profitable for the company to purchase, employ, and maintain diversified units of equipment.

And to keep this equipment in top running order, the firm has its own maintenance plant. It consists of large, fully equipped shops and storage yards located in Bridgeport, Conn. Eight full time mechanics are required to handle the maintenance operation. Over $100,000 a year is invested for the repair and upkeep of this equipment.

50% of gross invested in materials

How much does a $13 million building contractor like The E & F Construction Company invest in construction materials? To produce thirteen million dollars of building projects in a year, this contractor invests some $6 million of that for materials.

Since they are specialists in reinforced concrete, E & F has built its own concrete mix plant in Bridgeport to service its own needs. Up to 50,000 yds. a year is produced by this plant. E & F has eight concrete truck mixers which are used to haul the concrete to nearby projects. A portable concrete mix plant is also used on more remote jobs. This is another segment of E & F's operation that adds to its efficiency and speeds operations.



One of E&F's current building projects is the Mother House for the Sisters of Notre Dame, Wilton, Conn. $3¾ million project requiring 9,000 yds of concrete, 700 ton of reinforcing steel. All reinforced concrete structure with pitched slate roofs. Architect, J. Gerald Phelan.



Stiles & Morse Colleges, Yale University. $7 million project of 13 buildings. Reinforced concrete structures with exterior stone walls. Require 1500 ton of reinforcing steel, 20,000 yds of concrete. E&F is general contractor. Eero Saarinen and Assoc., Architects.

E&F Construction



C. P. Epifano, Sr.
Founder and President
of E & F Construction Co.

Purchases and stocks wide variety of materials

A visit to the vast materials storage yards of The E & F Construction Company reveals the significant amounts of materials used in this contractor's building activities. The company's philosophy is to stock enough of the basic materials needed to avoid any loss of time through delays in delivery. Company owned trailers and van trucks feed the materials needed in quantity to the various job sites. Much of these materials are purchased in car load lots and the company deals with a large group of suppliers. Quality of the products is a prime consideration in the company's purchases, according to top management. Some of the materials which E & F stocks in quantity include:

concrete and tile pipe—lumber and plank—reinforcing steel—road forms—plywood—windows—flooring—steel scaffolding—reinforcing steel floor mesh—glass block—masonry mortar cement—concrete forms.

This builder has learned through experience the many advantages of storing quantities of materials of this kind. They have also learned that to automate is to save valuable time. Whenever and wherever possible, E & F uses conveyors to transport materials used on the job. These are just some of the ways that this building contractor has streamlined its operations. And the success of this planning and direction of the management team is reflected in the company's continuous growth and success.

Purchasing policies prove sound

E & F's practice of purchasing materials by carload lots where possible affords them savings both in time and money. When it comes to equipment purchases, like the majority of contractors, there are many people who directly or indirectly influence the purchase. **V.P. C. Philip Epifano, says:**

"In our company, all of the principals in top management have some voice in the determination of what equipment we should buy. We also get the recommendation of our master mechanic and even our experienced equipment operators. It's on this basis of discussion and recommendation that we make our final decisions."

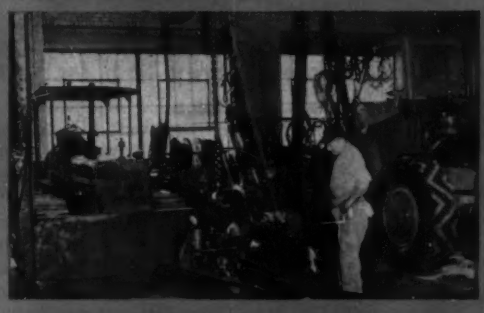
Like other important contractors throughout the United States, E & F's key personnel, from the president on down, must keep abreast of what's new in the industry . . . particularly in construction techniques, and profitable applications of equipment, materials, and labor. These key men in The E & F Construction Company subscribe to CONSTRUCTION METHODS AND EQUIPMENT. It's value to key men in contracting firms like E & F is reflected in the words of one of this company's principals shown at the upper right.

C. P. Epifano, Vice President of E&F says:

In reading CONSTRUCTION METHODS, I find it helpful to glean ideas from work done by other contractors. I look to it for the odd jobs and photos that show applications of new ideas and techniques. I also read the advertisements for new applications and attachments for machinery.

E&F Equipment Inventory

6 pickup trucks (Ford, Chevrolet)
6 suburbans (International Harvester)
1 bus (Ford)
2 canopy trucks (Ford)
20 dump trucks (Mack, Ford)
5 tractor trailers
26 trailers (flat bed, dump, van)
3 front end loaders (Michigan)
5 forklift trucks (Gerlinger, Clark, West)
4 cranes and shovels (Lorain, Manitowoc)
2 backhoes (Lorain)
5 crawler tractors (Caterpillar)
2 Graders (Huber Warco)
1 scraper (Allis-Chalmers)
1 traxcavator (Caterpillar)
2 concrete mix plants—(Blaw-Knox)
8 concrete truck mixers (Rex, Mack)
1 roller (CH & E)
4 compressors (Ingersoll Rand, Schramm, Jaeger, Chicago Pneumatic)
1 tracdrill—(Chicago Pneumatic)
3 impact wrenches—(Ingersoll-Rand)
12 pumps (Griffin, Wellpoint, Gorman-Rupp, Jaeger)
14 concrete and masonry saws (Clipper)
10 generators—(Griffin, Master, Winco, Wingpower)
12 company cars
15 concrete breakers—(Chicago Pneumatic)
8 rotators—(Chicago Pneumatic, Thor)
4 metal grinders—(Skil)
6 ⅜" electric drills—(Black & Decker)
3 welders—(Lincoln)
15 mortar Mixers—(Eaick)
6 tampers—(Jackson, Barco, Jay)
10 portable heaters—(Master)
4 electric planes—(Stanley)
4 router machines—(Stanley)
8 concrete buggies—(Prime Mover)
3 clamshell buckets—(Esco)
5 concrete buckets—(Insley)
5 table saws—(Delta, CH&E)
2 conveyors—(Mulkey)

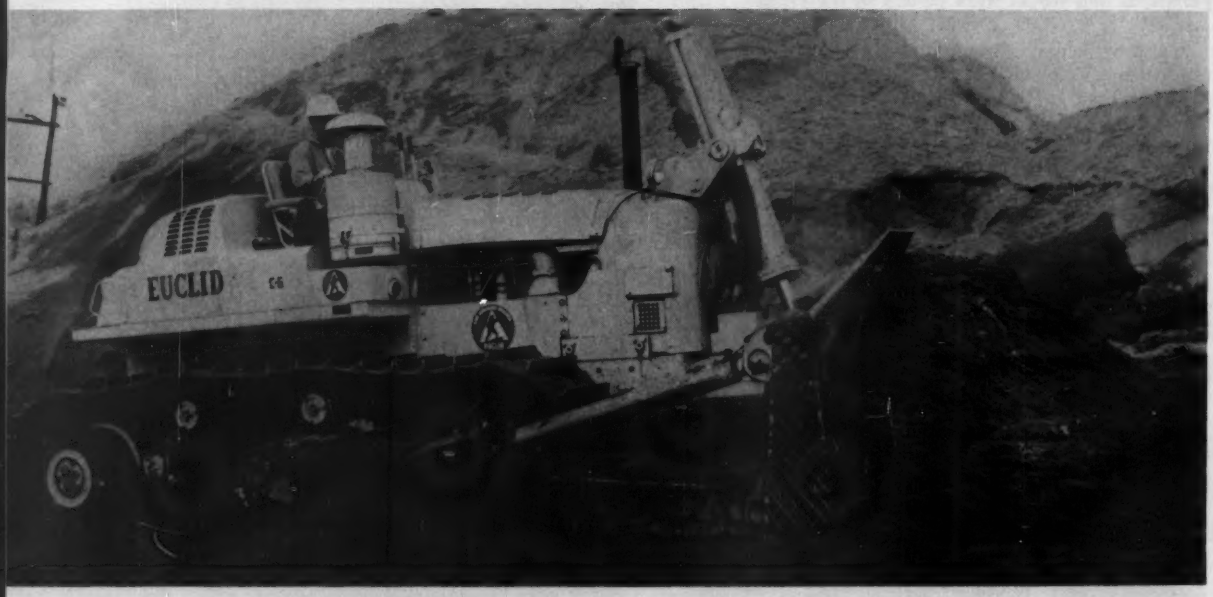


Part of The E&F maintenance shop is shown above. Engine overhaul and repair for one of E&F's $800,000 worth of construction machinery. Over $100,000 a year is devoted to this operation.

Construction Methods AND EQUIPMENT
A McGraw-Hill Publication

Construction Equipment News

For more information on any item, circle the key numbers found at the end of each item on the READER SERVICE CARD just inside the back cover.



Single Cylinder Operates Tractor Blades

The new hydraulic system for all blades used on Euclid's Model C-6 crawler tractor consists of a single cylinder and a variable-volume piston pump. The Gar Wood Variacs pump delivers oil only when needed for raising and lowering the blade. No oil circulates in the system in the hold position, so there is no build-up of heat. This insures longer life and little loss of horsepower. When the blade load exceeds system capacity, the Variacs pump stops delivery of oil and automatically goes into hold position. In addition to faster blade speed, lifting power of this new single cylinder design is up to seven tons greater than other dual-cylinder dozer mountings because of greater mechanical advantage of the lever arm. Single-cylinder mounting provides better tractor balance because the blade is mounted closer to the center of the front track roller.—Euclid Div. of General Motors, Hudson, Ohio.

Circle **301** *on Reader Service Card*



Portability of Survey Tool Increased

This transistorized version of Electrotape incorporates in one tripod-mounted unit a recessed parabolic antenna, a regulated power supply and compact battery, and electronic circuits which perform the actual distance measurement. Earlier models required separate power supplies and batteries. The new DM-20 package is smaller than the old distance-measuring sub-assembly alone. The unit provides instantaneous measurement of distances from 250 ft to 100 mi in any weather, day or night.—Cubic Corp., San Diego 11, Calif.

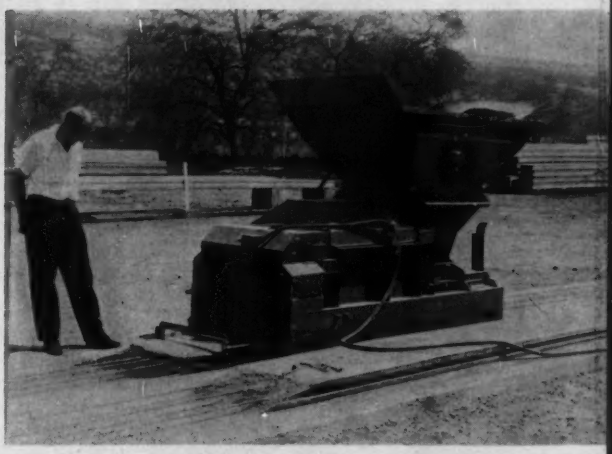
Circle **302** *on Reader Service Card*

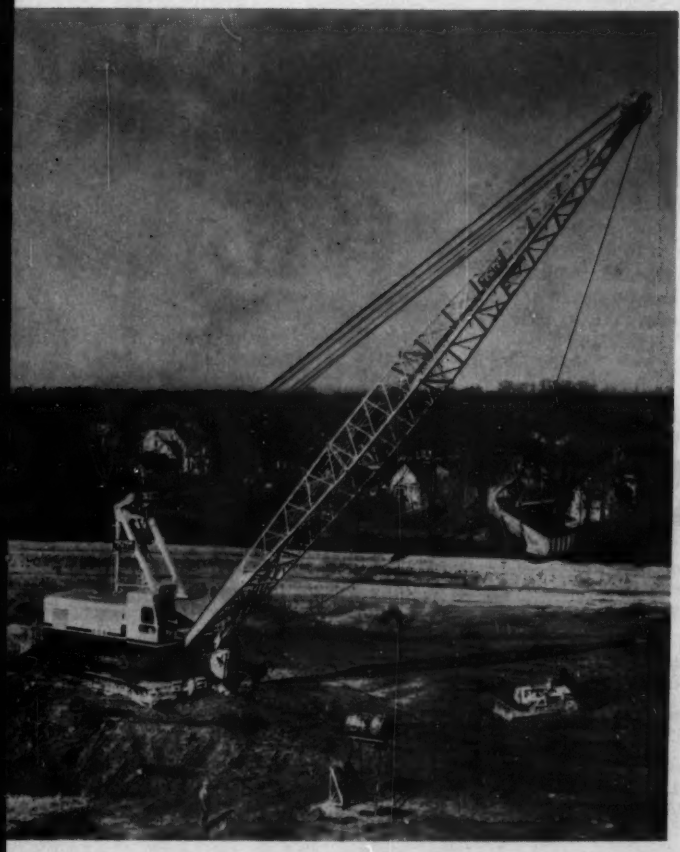


Roller Highlights Oscillating Drive Axle

Able to produce up to 3,225-lb wheel loads and 96-psi ground pressure, the Model 9S-14 self-propelled pneumatic roller has five front steering and four rear drive wheels. The machine's F-80 rear axle oscillates as well as each pair of drive wheels. A 73-hp gasoline engine powers the roller. The 9S-14 has four speed ranges and can travel up to 20 mph. It is 15 ft 8 in. long and it has a 167-cu-ft ballast capacity.—Littleford Bros., Inc., 457 E. Pearl St., Cincinnati 2, Ohio.

Circle 303 *on Reader Service Card*





Machine Makes Prestressed Planks

The Dodd Extruder makes 24-in.-wide solid prestressed concrete planks that range from 2 to 4 in. in thickness. The edges can be made with a V, a tongue and groove, or a ship lap joint. Electrically powered, the machine runs on a plain flat bed as narrow as 4 ft without forms or rails of any type. It is guided entirely by the prestressing strands. Depending upon the length of the prestressing bed, the Extruder is capable of producing up to 3,600 sq ft of prestressed plank in an 8-hr working day. The strips are cut down to required lengths at the time of shipping. Only one operator/inspector is needed to control the machine. The flat planks have proven excellent for roof members over moderate spans. When combined with a composite topping, they can be used for floor loadings over greater spans.—Leap Associates, Inc., P.O. Box 1053, Lakeland, Fla.

Circle 304 *on Reader Service Card*

Clamshell-Dragline Added to Line

The Model 210-B diesel-electric dragline and clamshell is available with boom lengths of 100, 120, and 140 ft that can handle up to 10-yd buckets. Three sets of crawlers are offered: standard, intermediate, and long-wide for soft ground conditions. A key feature of the 210-B is the elimination of friction clutches for all cyclic functions. Hoist and drag or holding and closing motions are regulated by a static-type control of independent electric eddy current clutches. Swing motion is controlled by a variable Ward Leonard system.—Bucyrus-Erie Co., S. Milwaukee, Wis.

Circle 305 *on Reader Service Card*

WHEN CONSTRUCTION JOBS CALL FOR SOIL COMPACTION



BARCO is the ANSWER!

When You're Figuring For The "Low Bid"—No other tool can give you the economy and dependability offered by Barco Rammers on high degree soil compaction for all kinds of projects—Highways, Freeways, Hydro-electric Power and Flood Control Dams, Airports, Bridges, Defense Sites, Buildings, and Housing Developments!

When You Have To Meet Tough Specifications—In test after test, Barco Rammers have demonstrated their ability to deliver 95% to 97.5% compaction (modified Proctor Method)—EASILY! EFFICIENTLY! ECONOMICALLY! The Barco Rammer is especially useful for compacting fill in restricted areas. ASK FOR A DEMONSTRATION.

When You're Up Against A Tight Schedule—One of the biggest advantages offered by Barco Rammers is ability to handle work in minimum time. On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On trench back fill, using lifts up to 24", the rate for 18" trench is 360 to 600 feet per hour. *When time is at a premium,* BARCO PERFORMANCE PAYS DIVIDENDS—find out about it NOW!

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FOUNDED 1909

BARCO RAMMER

PRODUCTS BACKED BY EXPERIENCE

BARCO MANUFACTURING CO.
5120 Hough St., Barrington, Illinois

Gentlemen:
YES! I want to know about Barco Rammers for Soil Compaction:

Name_____

Company_____

Address_____

☐ Please send me the name and address of your nearest dealer.

☐ Without obligating me, I would be interested in a DEMONSTRATION.

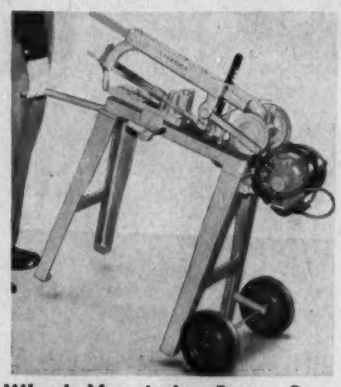
☐ Please send General Catalog No. 621.

☐ Please send free bulletin on "SOIL COMPACTION COST DATA."

Circle 170 on Reader Service Card

EQUIPMENT NEWS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD which is just inside the back cover.



Wheels Mounted on Power Saw

Rubber-tired wheels mounted on the rear legs of the Jefferson Model 601 power hacksaw permit the machine to be rolled from one location to another. The machine can be tipped onto the wheels by a handle at the front. The saw, powered by a ¼-hp motor can be fitted with 10 in. or 12 in. blades. —Sales Service Mfg. Co., 2363 University Ave., St. Paul 14, Minn.

Circle 306 on Reader Service Card



Angle Blade Fits Pair Of Michigan Tractors

Designed for use on Models 180 and 280 wheeled tractors, this new blade angles 25 deg to right or left and tilts up to 8 in. The Model 180 blade (with "C" frame) weighs 6,500 lb. It is 14¼ ft wide and 3 1/3 ft high. Maximum cutting depth with the blade in straight position is 1 ft 10 in. and in angled position 2 ft 6 in. The Model 280 blade (with "C" frame) weighs 8,800 lb. Maximum cutting depth with the blade in straight position is 3 ft and in angled position 3 ft 8 in. The Model 280 blade is 15¼ ft wide and 3 1/3 ft high.—Construction Machinery Div., Clark Equipment Co., Pipestone Plant, Benton Harbor, Mich.

Circle 307 on Reader Service Card



Blaw-Knox steel forms speed Mountain Home Air Force Base Titan missile job

ONLY FOUR POURS NEEDED FOR 125′ DIAMETER CONCRETE DOME

Two opposing steel forms, each a 45° segment, were moved just three times to complete the pouring of concrete for the hemispherical dome for the power house on this new complex being constructed at the Mountain Home Air Force Base, Mountain Home, Idaho. Kaiser-Raymond-Macco-Puget Sound joint venture has the prime contract for this U.S. Army District project, Walla Walla Corps of Engineers, Walla Walla, Washington.

After the 16′ diameter center keystone was poured on top of the umbrella pedestal, the two forms were poured, then lowered by screw jacks and rotated on rubber wheels to the three other positions needed to complete the dome. Both of the inside and outside forms are designed and constructed to a true spherical surface.

Similar Blaw-Knox forms for a 100′ diameter control center dome were used, as were forms for missile silos and terminal silos on the base. Each of the forms were used for several domes and silos and could well be used on other jobs.

All of the forms were made in sections as large as shipping facilities would permit, in order to minimize on-the-job erection time.

Precise engineering and construction for important projects like this, durability, re-useability, plus ease and simplicity of handling are features of Blaw-Knox steel forms for domes, silos, bridges, tunnels, dams or other heavy construction. Call Blaw-Knox steel forms consultation service early in your planning for important engineering help. Blaw-Knox Company, Pittsburgh 38, Pa.

BLAW-KNOX

Steel Forms

BLAW-KNOX

Blaw-Knox designs and manufactures for America's growth industries: METALS: Rolling Mills • Steel Processing Lines • Rolls • Castings • Open Hearth Specialties • PROCESSING: Process Design, Engineering and Plant Construction Services • Process Equipment and Pressure Piping • CONSTRUCTION: Concrete and Bituminous Paving Machines • Concrete Batching Plants and Forms • Gratings • AEROSPACE: Fixed and Steerable Antennas • Radio Telescopes • Towers and Special Structures • POWER: Power Plant Specialties and Valves

Circle 171 *on Reader Service Card*



Cuts vibrating costs in half

That's right — you can cut vibrating costs in half with Homelite High-Cycle Concrete Vibrators. You save labor costs because only one man is needed to handle a Homelite. You save extra expense of constructing special scaffolds and cradles because you can place the Homelite High-Cycle Generator in any convenient spot within 400′ of the vibrating operation. You save time (and money) because one powerful Homelite will place 30 to 40 cubic yards of 2″ slump concrete per hour. You save again on maintenance because the efficient, high-cycle motor in the vibrator barrel is the most trouble-free electric motor made. And, because the Homelite High-Cycle Generator delivers up to 2500 watts of 110 volt D.C. current as well as up to 3000 watts of high-cycle power simultaneously, you save the added expense of an extra generator for operating Universal power tools and lights.

We'll gladly prove these savings on your job. Ask for a demonstration.



Homelite factory branches are located throughout the country. Your nearest one is as close as your phone. Call them or write for convincing demonstration or rapid service in any way.

HOMELITE

CARRYABLE
CONCRETE **VIBRATORS**
PUMPS • GENERATORS • BLOWERS

HOMELITE • A DIVISION OF TEXTRON INC. •1006 RIVERDALE AVE., PORT CHESTER, NEW YORK • IN CANADA — TERRY MACHINERY CO., LTD.

Circle 172 on Reader Service Card

EQUIPMENT NEWS . . .

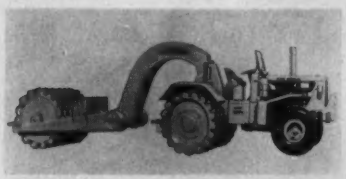
For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.



New Grader, Redesigned Scraper Added to Line

Allis-Chalmers' fifth model in its line of motor graders is the 145-T. The machine is powered by a turbocharged 105-hp 7000 series engine. The 145-T grader weighs 21,500 lb. A-C has redesigned its 155-hp TS-160 scraper, the smallest in its line, to increase the unit's capacity to 8½ struck and 11 heaped yd and the payload to 13 tons. A new power train developed for A-C's HD-21 crawler tractor offers oil-type steering clutches that are hydraulically actuated; oil-type steering brakes, also hydraulically actuated; and a spray lubricated transmission. — Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.

Circle 308 *on Reader Service Card*



Sheepsfoot Rollers Replace Tractor's Rear Wheels

The Hyster C400B compactor operates as an integral part of the new Caterpillar 630A tractor. Rear wheels are replaced with compacting wheels. A gooseneck trailing roller contains two similar wheels. The existing tractor axles, brakes, and bearings are used for the tractor compaction wheels. Recommended ballast is three 4,000-lb steel weights carried on the frame of the towed unit. Wet sand can be carried in the trailing unit wheels for additional weight. Ground reactions for the unit are in excess of 30,000 lb per set of wheels—Hyster Co. P.O. Box 328, Peoria, Ill.

Circle 309 *on Reader Service Card*



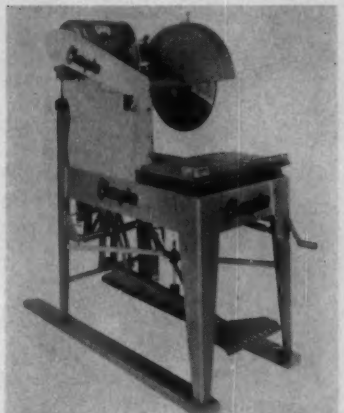
Mobile System Supplies 30 Welders

The MobilArx, a complete multi-arc welding system packaged in a truck, supplies direct current to as many as 30 welders. One plug-in primary connection energizes the system. A silicon rectifier power source, rated at 75 v., 1,500 amps dc continuous and 2,250 amps for 2 min., supplies power to the operators through 30 400-amp welding control stations. To weld, operators simply run out cables from reels on the truck and plug into receptacles on the vehicle. The MobilArx was developed by Nottingham in conjunction with Scientific Design Co., Inc.—J. B. Nottingham & Co., Inc., 441 Lexington Ave., New York 17, N.Y.

Circle 310 *on Reader Service Card*

Choice of Three Motors Offered With Masonry Saw

The Ajust-O-Matic masonry saw has a cutting head that is moved up and down within a 10-in. range at the turn of a crank. Available with a 1½, 2, or 3-hp, fan-cooled electric motor, the saw comes with a 14 or 20-in.-capacity blade guard. Other features include a self-priming pump with a 1-yr warranty, 110/220-v. selector switch, and a lock

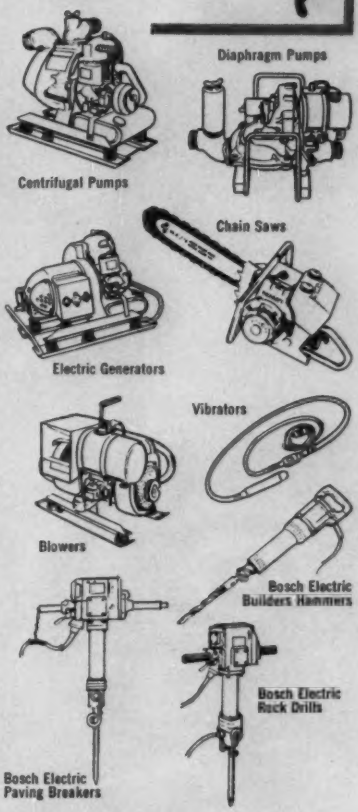


mechanism for jam cutting with diamond blades.—Champion Mfg. Co., 3700 Forest Park Ave., St. Louis 8, Mo.

Circle 311 *on Reader Service Card*



HOMELITE Factory Branches throughout the country sell and service Homelite's complete line of carryable construction equipment.



HOMELITE FACTORY BRANCHES

EAST: CONNECTICUT: Greenwich, Hartford • NEW JERSEY: North Arlington, Woodbridge • NEW YORK: Albany (Latham), Buffalo, New York (North Arlington, N. J.), Rochester, Syracuse • MAINE: Orono • MARYLAND: Baltimore • MASSACHUSETTS: Boston (Allston) • PENNSYLVANIA: Altoona, Erie, Harrisburg, Hazleton, Philadelphia, Pittsburgh, Malvern • VIRGINIA: Arlington, Richmond, Roanoke • WEST VIRGINIA: Charleston, Clarksburg

SOUTH: GEORGIA: Atlanta • FLORIDA: Jacksonville, Miami • LOUISIANA: New Orleans (Metairie), Shreveport (Bossier City) • NORTH CAROLINA: Charlotte, Raleigh • OKLAHOMA: Oklahoma City • TENNESSEE: Knoxville, Memphis • TEXAS: Dallas, Lufkin

MID-WEST: ILLINOIS: Chicago (Stone Park) • INDIANA: Indianapolis • MICHIGAN: Detroit, Grand Rapids • MINNESOTA: St. Paul • MISSOURI: Kansas City, St. Louis • NEBRASKA: Omaha • OHIO: Cincinnati, Cleveland, Toledo • WISCONSIN: Milwaukee

WEST: CALIFORNIA: Fresno, Los Angeles (Alhambra), Sacramento, San Francisco • COLORADO: Denver • OREGON: Portland • UTAH: Salt Lake City • WASHINGTON: Seattle, Spokane

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1006 Riverdale Ave., Port Chester, New York

In Canada:

TERRY MACHINERY CO. LTD.


EUCLID
all-wheel drive . .

. . pays off in all-job versatility!

For high productive capacity and all around work-ability Euclid "Twins" are way ahead of other scrapers of comparable size. No matter what your scraper requirements may be—"mountain goat" climbing ability, pushing through high rolling resistance sand and heavy going, or working in good dirt—all-wheel drive "Eucs" get more work done on every job.

Both the TS-14 and TS-24 have proved outstanding performers and big producers on a wide range of work from big yardage projects to smaller jobs. With separate Torqmatic Drives and power trains for each axle, these "Eucs" work on grades and under adverse job conditions that stall other scrapers. Each is a one-man earthmoving spread that can work without a pusher tractor . . . each has plenty of power and traction to pick up a heaped load in a hurry . . . pull out of the pit fast . . . and really highball on the haul to the fill and return.

If you want 14 or 24 yd. scrapers (20 and 32 yds. heaped) that can work more days per year . . . that can handle more kinds of work and give you bigger production . . . ask your dealer for the facts and figures that show why all-wheel drive Euclid "Twins" give you a better return on your investment.

EUCLID **Division of General Motors, Cleveland 17, Ohio**

Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland



TS-24 *563 total h.p. . . . capacity of 24 yds. struck, 32 yds. heaped . . . 27.00 x 33.5 tires with 33.5 x 33 optional.*

TS-14 *296 total h.p. . . . struck capacity of 14 yds. . . . 4-speed Torqmatic Drives with converter lock-up.*



GM GENERAL MOTORS EUCLID

EUCLID

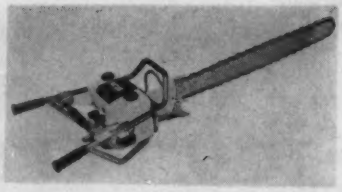
FOR MOVING EARTH, ROCK, COAL AND ORE

EQUIPMENT NEWS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

Chain Saw Trio Supplements Line

Heading the new line of McCulloch chain saws is the ONE/92 (pictured), which has a 360-deg swivel transmission. It weighs 34 lb less bar and chain and runs 65 min non-stop on a single gallon of fuel. The ONE/92 can be adapted

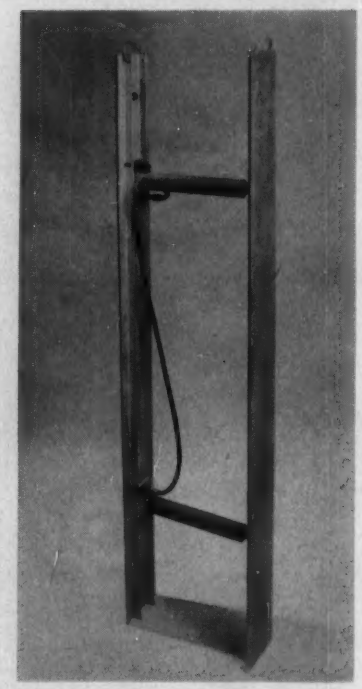


to a 12-in. earth auger. The other new chain saws are the ONE/82, a gear drive unit weighing 24 lb, and the direct-drive ONE-72, weighing 21 lb.—McCulloch Corp., 6101 W. Century Blvd., Los Angeles 45, Calif.

Circle 312 on Reader Service Card

Hydraulic Shores Speed Pipe Laying

Featuring one-man operation, these hydraulically actuated, aluminum Speed Shores have two 21-in.-long cylinders that operate at 1,500 psi. The piston stroke is



14 in. The working pressure of the ¼-in. hose is 5,000 psi. Speed Shores can be used on all trenches up to 36 in. wide. — Speed Shore Corp., 17000 S. Western Ave., Gardena, Calif.

Circle 313 on Reader Service Card



Records from construction, logging and drilling firms prove off-the-road steel cord tires reduce downtime and cut operating costs—no matter how heavy the loads or how rugged the job. They provide many more hours of trouble-free service than conventional textile tires.

With thinner sidewalls, they run 20°F cooler. Yet sidewalls are up to 10 times stronger—for added resistance to blowouts, impact breaks, cutting and abrasions. They're fortified with 4 plies of 400,000 psi high tensile carbon steel wire from bead to bead. Steel cord tires have a double extra-ply rating— solid proof of strength and high load capacity.

New, technically improved steel cord tires make seldom-needed repairs easy.

Increase service hours and number of retreads by specifying tires made with Bekaert Steel Wire Cord.

Write for free data booklet

PLEASE SEND ME A COPY OF YOUR BOOKLET

Bekaert *Steel Wire Corporation*

655 MADISON AVE., NEW YORK 21, NEW YORK, DEPT. F

NAME_____ COMPANY_____

ADDRESS_____

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BEKAERT STEEL CORD, ZWEVEGEM, BELGIUM • Among Europe's Foremost Steel Wire Producers Since 1880

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Circle 176 on Reader Service Card



Wet or Dry Concrete Gunning Possible with Portable Outfit

Capable of both wet or dry gunning and pressure grouting, the WD gun features a built-in water meter feed control and a Roto-Rol mixer. When used for wet gunning, the WD produces 8 yph with 365 cfm of air and 2-in. material hose. When dry gunning, it can turn out 8 yph with 500 cfm of air and a 1¾-in. hose. — Air Placement Equipment Co., 1012A W. 25th St., Kansas City 8, Mo.

Circle 314 on Reader Service Card



H. J. Williams Company, Inc., of York, Pa., was general contractor; subcontractor for overpasses: John H. Wickersham Engineering & Construction, Inc.; guard rail erected by L. S. Lee & Son, Harrisburg; steelwork fabricated and erected by Lehigh Structural Steel Company, Allentown, Pa.

This interchange is a showcase for Bethlehem road steels

This double interchange is near Lancaster, Pa., connecting Route 230 By-pass, Route 222, and Route 501. Built into the concrete pavement are Bethlehem bar mats, dowel units, and other paving steels. Bethlehem structural steel and reinforcing bars were used in the overpasses, and Bethlehem cable guard rail protects various points in the interchange.

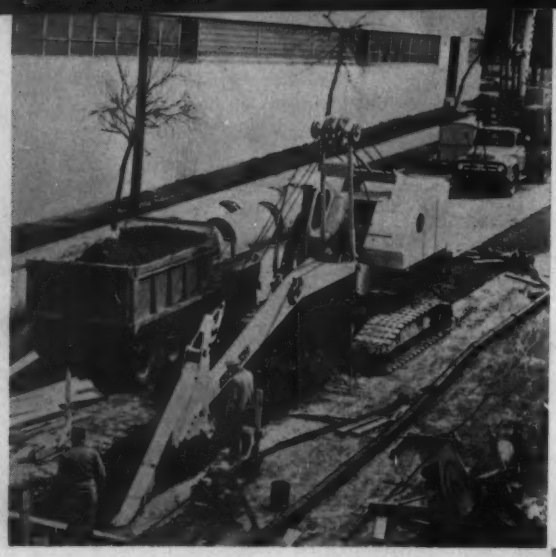
Bethlehem supplies the largest line of steel products for highways in the country—quality steel products for every operation from groundbreaking to completion of the road. Whatever your needs, you can count on this single source for steel products with reliability, rugged performance, and full compliance with state and federal standards.

Steel *for Strength ... Economy ... Versatility*

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL



New Boom Fits Backhoe

The new boom for all Model 305 backhoes permits an overall reach of 33 ft and maximum digging depth to 20 ft. Heeling range has been boosted 17%, digging force 55%.—Koehring Div., Koehring Co., 3026 W. Concordia Ave., Milwaukee, Wis.

Circle 315 *on Reader Service Card*

Homelite Adds Generators, Pumps

Model 46A115 is part of Homelite's new array of generators and pumps driven by 4-cycle engines. It delivers 1,500 w. of 115-v. ac power, weighs 104 lb, and is available with gasoline or LP gas. Other generators come in 3,000 and 5,000-w sizes. The self-priming pumps are offered in 1½, 2, and 3-in. centrifugal and 3-in. diaphragm models.—Homelite, 70 Riverdale Ave., Port Chester, N.Y.

Circle 316 *on Reader Service Card*





Spray Bar Is Feature of Distributor

The 1,000-gal Spray Master incorporates the Uniflo mechanically operated, full-circulating spray bar. Individually controlled nozzles are located on 4-in. centers. The operator simply dials the rate of application desired on a shot meter. The rate can be regulated from .075 to 3.0 gal per sq yd.—Littleford Bros., Inc., 453 E. Pearl St., Cincinnati 2, Ohio.

Circle 317 *on Reader Service Card*



Attachments Make Trencher Versatile

A crumber attachment for the T-66 trencher-backfiller pushes loose dirt in the bottom of the trench back into the digging teeth for pick-up. Also available is a sweep attachment that can be positioned to return spoilage to the trench or dress it away from the edge. Another attachment, for working flush against a building, has a special boom mounting that sets the digging chain assembly to the extreme left of the shaft.—Davis Mfg. Inc., 1500 S. McClean Blvd., Wichita, Kan.

Circle 318 *on Reader Service Card*

AMSCO Simplex . . . best by test

Simplex lasts over twice as long as other teeth on Massachusetts Construction Job



A Massachusetts contractor made this simple test. Two Simplex 2-part teeth were installed on the outside corners of a shovel dipper. Two competitive 2-part teeth were installed between the Simplex teeth. After a period of heavy digging midway through the test, the position of the two types of teeth were reversed, placing the Simplex teeth in the middle. After the test period the Simplex teeth *showed less than half the wear of the competitive teeth.* AND Simplex was best by test.

Shovel owners in all parts of the country find Simplex teeth are lasting 2 to 4 times longer than competitive 2-part teeth. They are made of the toughest alloy steel available for this use (Amsco "CS"—a specially heat-treated steel). Tips stay sharp, are quickly reversible and can be changed in minutes. The husky adapter provides greater bearing and supporting surface to help insure a strong tight fit of the tip.

If dipper tooth wear is running up your excavating costs make this simple test yourself. Your Amsco dealer will be glad to cooperate. If you don't know his name, write us, and we'll send you his address plus a copy of Amsco's Buyer's Guide for Simplex Teeth.

AMSCO

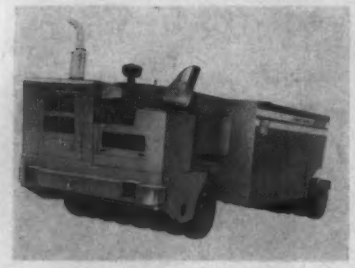
AMERICAN MANGANESE STEEL DIVISION
CHICAGO HEIGHTS, ILLINOIS

AMERICAN Brake Shoe COMPANY

Other plants in:
Denver • Los Angeles • New Castle, Delaware
Oakland, California • St. Louis
In Canada: Joliette Steel and Manitoba Steel Foundry Divisions
In Mexico: Amsco Mexicana, S.A.

EQUIPMENT NEWS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.



Pneumatic-Tired Roller Has Eight Wheels Front and Rear

The AMPAC-4, a 16-wheel pneumatic-tired roller, can apply from 45 to 95 psi pressure. The offset wheels give a tread to tread overlap up to 5 in. The machine has front wheel drive. Dry material can be loaded into the ballast compartment through an 84-in.-wide opening. Drain pipes are provided to empty water ballast. —Construction Equipment Div., American-Marietta Co., Milwaukee 1, Wis.

Circle 319 on Reader Service Card



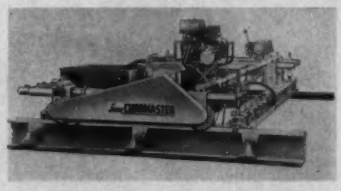
Crawler-Mounted Machines Added to Equipment Line

A series of three crawler-mounted machines for backhoe work joins Quick-Way's present truck-mounted models. The new machines are the ⅜ yd 85-BC, the ⅜-½-yd 100-BC, and the ½-yd 125-BC. Each unit has independent swing and travel with two-speed travel forward or reverse. The undercarriage has six track rollers and two idler rollers on each side.—Quick-Way Truck Shovel Co., P.O. Box 1800, Denver 1, Colo.

Circle 320 on Reader Service Card

Machine Finishes Concrete Pavement, Builds Curbs

The all-electric Curbmaster Model CMF is powered by twin motors, one mounted on each side of the machine and individually controlled. The Curbmaster strikes off the slab concrete, puts a trowel finish on it, and builds integral curb to any cross section. This is accomplished with regular curb and gutter forms and making one pass over the concrete. Curb concrete is placed by means of variable speed vibration, and curb design



can be changed in a few minutes. Slabs can be poured up to 21 ft wide, and the screeds can be set to any desired crown. The machine can be converted into a curb builder for use on large paving jobs where a full train of finishing equipment is required or converted into a curb and gutter machine. It also can be used to widen present slabs with or without curb.—Iowa Construction Equipment Corp., Cedar Falls, Iowa.

Circle 321 on Reader Service Card

To the contractor considering concrete precasting:

FMC IS FIRST IN STEEL FORMS

THEY STAY FIRST BY HELPING YOU

Providing the best forms, and backing them up with the best service keeps FMC on top. Profitable casting operations depend not only on steel forms that produce uniform, accurate members, but on forms that are designed for contractors' efficient use. FMC offers a broad line of quality steel forms for the contractor, plus years of form design experience that can save you dollars and time. FMC's capable, qualified engineering force and field engineers are always at your disposal for facts and figures on form design. Get the benefit of experienced engineering, superior service and the finest Form-Crete steel forms. Before you bid—contact FMC.



Send for your free copy of the #400 Form-Crete Catalog. Describes the entire form line and is a handy reference.



Putting Ideas to Work

fmc

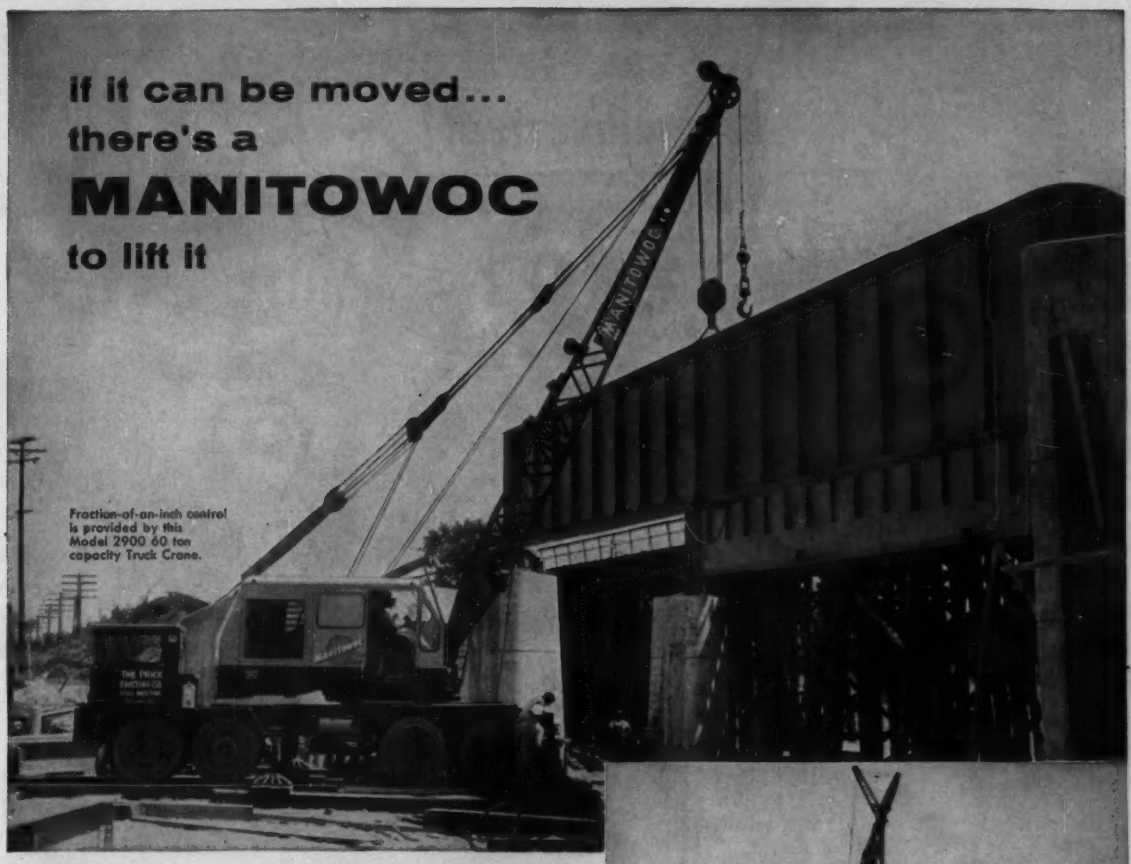
Form-Crete Department

General Sales Offices: Lakeland, Florida

◀ *Circle 179 on Reader Service Card*

Circle 180 on Reader Service Card

if it can be moved... there's a MANITOWOC to lift it



Fraction-of-an-inch control is provided by this Model 2900 60 ton capacity Truck Crane.

Why have Manitowocs gained a world-wide reputation as the "Cadillacs of construction cranes"? Because contractors everywhere know that on any lift crane job — steel erection, concrete pouring, bridge construction — the work will go faster and easier with a Manitowoc. They know that Manitowoc engineers have been specialists in crane design for over 30 years. They know that quality Manitowoc components will give them years of reliable lift crane service with the least maintenance and time loss.

You get a simple, direct power train that eliminates wasted energy and provides a reserve lift capacity when you need it most. There's outstanding stability from a solid foundation for high, heavy lifts. Smooth performing disc clutches, fast-acting brakes, and 3-stage torque converters help to provide precise, positive control. And you get profitable all-job use because every Manitowoc is easily convertible to clamshell and dragline attachments . . . several to shovel and trench hoe.

Get more information *today* on the most complete line in Manitowoc's history. Mail the coupon now!



Unloading steel trusses at the site of Chicago's new Metropolitan Fair and Exposition Center is a 125 ton capacity Model 4000 crane, one of over 100 Manitowocs owned by American Bridge Division of U. S. Steel.

TRENCH HOES 1¼ to 3 YDS.

SHOVELS 1¼ to 8 YDS.

Manitowoc

CRANES 25 to 125 TONS

DRAGLINES 1¼ to 7 YDS.

MANITOWOC ENGINEERING CORP. Dept. CM
(A subsidiary of The Manitowoc Company, Inc.)
MANITOWOC, WISCONSIN

Please send details on the following Manitowoc cranes:

CRAWLER-MOUNTED
- ☐ 25 ton
- ☐ 35 ton
- ☐ 50 ton
- ☐ 60 ton
- ☐ 65 ton
- ☐ 100 ton
- ☐ 125 ton and up

TRUCK CRANES
- ☐ 45 ton
- ☐ 60 ton

Name _____

Company _____

Address _____

City _____ Zone _____ State _____

Circle 181 *on Reader Service Card*



Radio control keeps everyone on the go by keeping drivers in the know!

What caused your last work stoppage? Could it have been prevented by radioing your foremen and supervisors the exact job condition—letting them send their trucks directly to areas where materials or equipment were needed immediately? How much time and money would you have saved? Take your own work. How much time can radio save you in conferring, checking, planning, and trouble shooting?

Ask a nearby Motorola 2-way radio user. Learn firsthand how you and your foremen can become more productive—saving miles and minutes with each 2-way radio message.

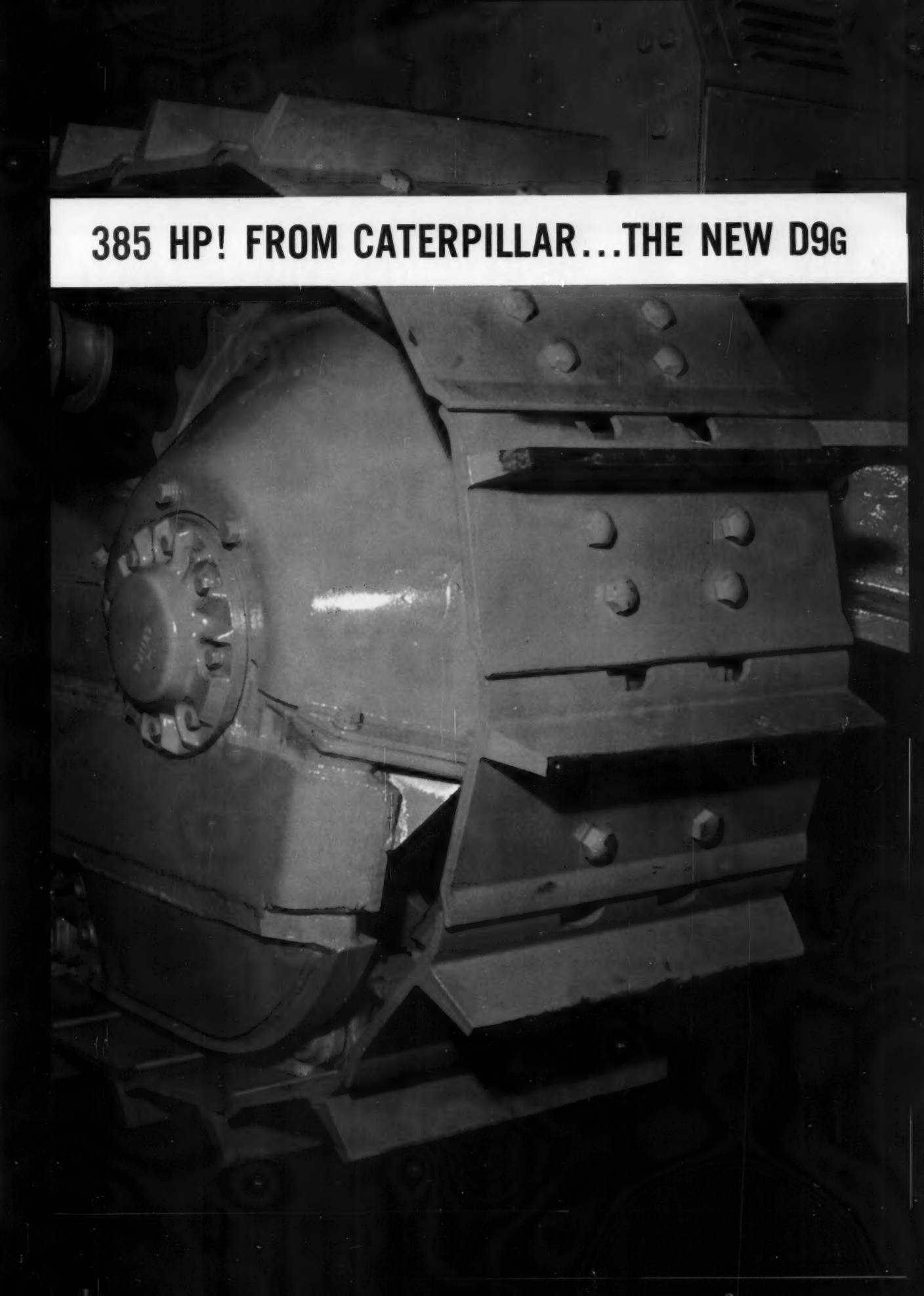
Why Motorola? You get highest dollar value! 1. A custom-planned system engineered to your specific requirements—Motorola assumes complete responsibility for your system. 2. The right equipment—from the world's most complete line of communications tools—Motorola has thousands of installations in every conceivable type of vehicle. 3. Unmatched reliability, proved by the majority of the nation's utilities, police, fire and transportation services—the professional buyers of 2-way radio. 4. Motorola service by factory-trained technicians from nearby maintenance centers—keeps your system at factory peak performance for long-lasting service and satisfaction. These are some of the reasons Motorola outsells all other makes combined!

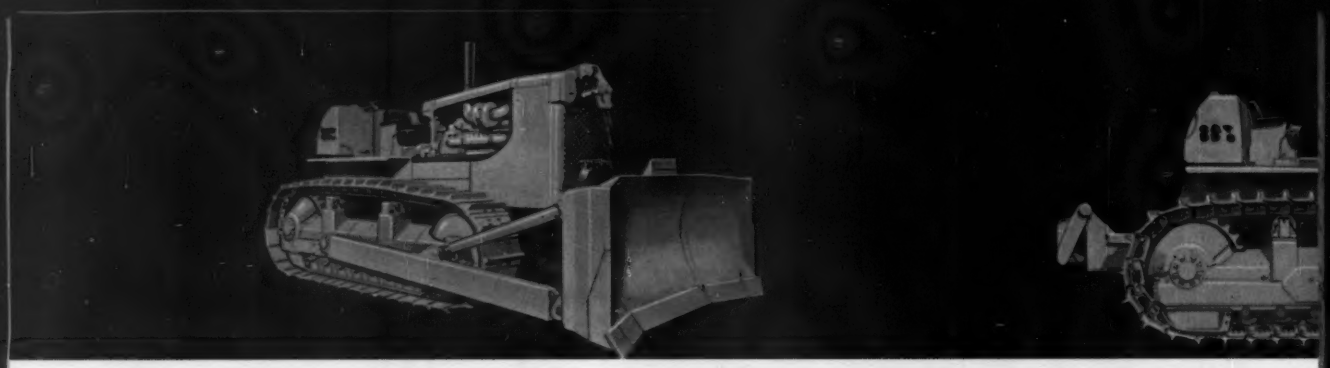
Call your local Motorola Factory Sales Engineer—or write today to see how 2-way radio can most profitably serve you. For companies with operations abroad—Motorola sales and service are available in 50 countries throughout the world. Write Dept. ACM123

MOTOROLA 2-WAY RADIO

Motorola Communications & Electronics, Inc., 4501 Augusta Blvd., Chicago 51, Ill. • A Subsidiary of Motorola Inc.

Circle 182 *on Reader Service Card*


385 HP! FROM CATERPILLAR...THE NEW D9G



NEW D9G: 385 HP, 64,800 LB., POWER SHIFT,

For high-volume dozing, pushloading or ripping, the new D9G has what it takes . . . at minimum cost per yard!

The engine in the new D9 delivers 385 flywheel horsepower. That's *100 more horsepower* than the first D9 introduced five years ago!

Weight: 64,800 lb.—14% more than the first D9!

Torque divider power shift transmission . . . massive heavy-duty undercarriage . . . and power train with new, built-in ruggedness for long life.

What else is new? Matching the D9G, to make best use of its power, is a full line of attachments. Cable controls, hydraulic controls, pushing equipment, dozers, rippers and others—all designed to help this new tractor really put out on the toughest big jobs.

CAT D353 ENGINE AND MATCHED POWER TRAIN

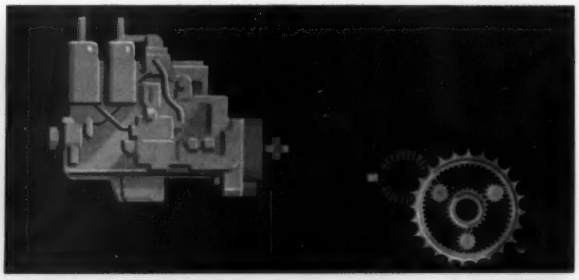
Engine: This engine, rated at 385 HP (flywheel) at 1330 RPM, has been proven over thousands of hours on the roughest jobs. Cat-built, its 6.25″ x 8″ 6-cylinder design now incorporates these new features:

• **Controlled Turbocharging**—This system, found only in the D9G among crawler tractors, automatically forces more air into the cylinders during lug. Result: increased maximum torque, fast engine response over a wide range of operation.

• **Aftercooler**—Air leaving the turbocharger passes through a water-cooled heat exchanger. Cooled air has greater density. Thus, more air can be packed into the cylinders, giving greater power output and efficiency.

• **PLUS**—Shroud-mounted fan with torque limiting clutch provides maximum cooling during lug and reduces fan-absorbed HP by 30%. Exclusive Caterpillar fuel injection system allows use of low-cost fuel. Also, twin dry-type air cleaners . . . oil-jet-cooled pistons . . . "Hi-Electro" hardened cylinder liners and crankshaft journals.

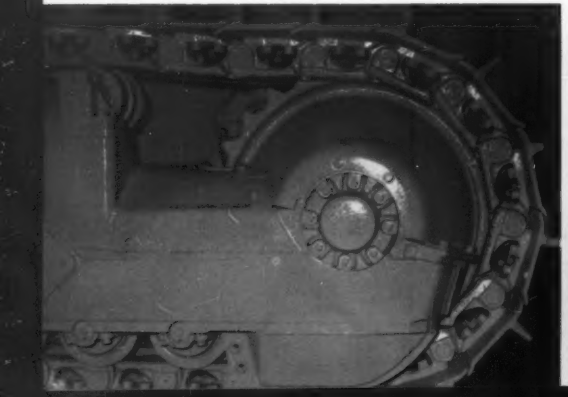
New Power Train: Major advances in the D9G's new power train include *new oil-cooled steering clutches and brakes, new planetary final drives,* and a time and cost saving *common lube system.*



The new steering clutches, spring engaged and hydraulically released, need no adjustments. The longer service life of this type of clutch, as well as that of oil-cooled brakes, has been proven by millions of hours' use on D8H Tractors.

The new planetary final drives increase gear reduction ratios from 8.8:1 to 18:1, materially reducing torque load on all other power train components. A common system cools and lubricates torque divider, transmission, bevel gear, steering clutches and brakes. This means one service point . . . one type of oil. Final drives have their own pressure lube systems complete with pump, filter and disposable element.

Entire power train has unitized construction for fast, individual removal of components.



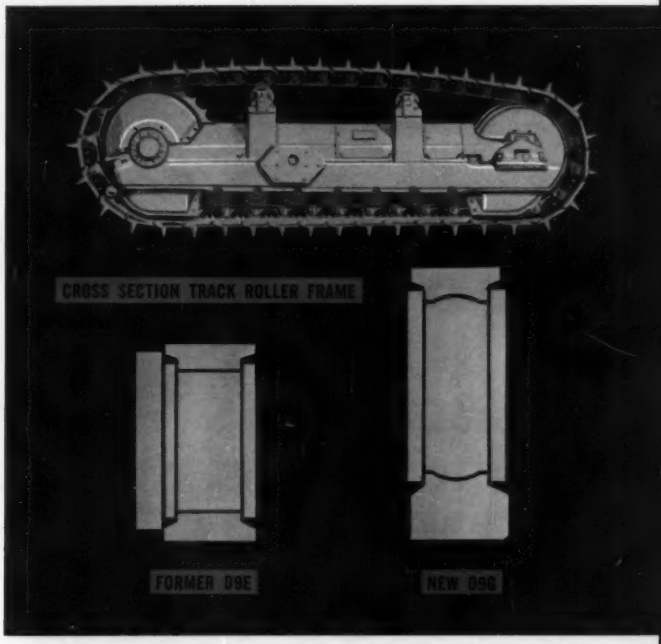






HIGH-PRODUCTION DOZER, PUSHER, RIPPER





PROVEN TORQUE DIVIDER POWER SHIFT:

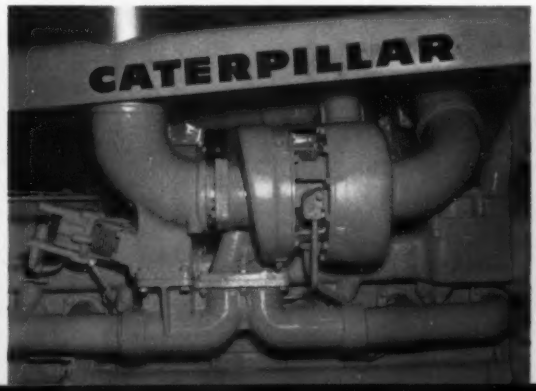
Standard equipment on the D9G, this exclusive Caterpillar design combines the efficiency and "snap" of direct drive with the load-matching and anti-stall characteristics of a torque converter.

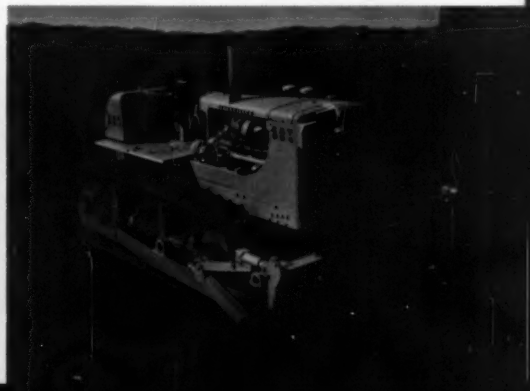
A single lever gives the operator finger-tip control of his machine. It adds up to fast cycle times, less operator fatigue with greater efficiency. You get more out of the machine *all day*.

MASSIVE HEAVY-DUTY UNDERCARRIAGE:

Immense strength and rigidity have been built into the D9G undercarriage to make it more than equal to the roughest ripping job. Box section frame is wider and deeper than previous models. Hydraulic track adjusters are standard. Lifetime lubricated rollers with special alloy deep hardened rims assure long life . . . and they require no servicing until rebuilt. These features give the D9G the finest big tractor undercarriage ever built.



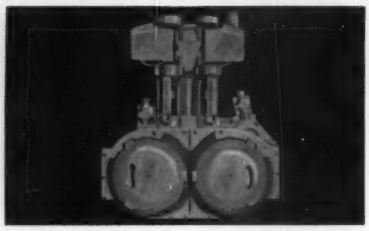




The NEW 385 HP D9G—with high-production attachments

The D9G is big . . . and, it becomes versatile, too, with the many matching attachments your Caterpillar Dealer offers. Cable controls, hydraulic controls, rippers, dozers, pushing equipment, scrapers and others help make the D9G the most productive big tractor available.

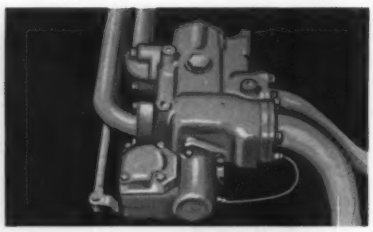
To prove the D9G's productive capabilities on your job, talk to your Caterpillar Dealer.



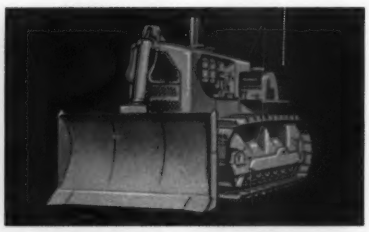
New cable controls have larger clutch, brake and drum capacities and are hydraulically boosted. Available in front or rear single drum for dozer application. Rear single drum may be converted to double drum at any time. You buy what you need.



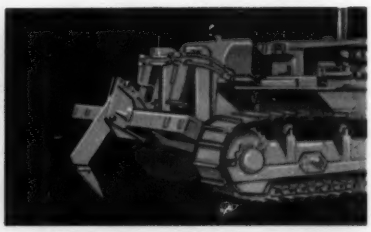
No. 9U can increase dozing production as much as 50%. Also available are No. 9A and No. 9S. Tilt cylinder can be used with U or straight blade. Choice of hydraulic or cable control for all blades. Hydraulic dozers have "quick-drop" valves.



New hydraulic controls available in nine arrangements to meet every application need.



No. 9C dozer combines dozing and cushioned pushing functions into one attachment. As a pusher, it allows 3 MPH cushioned contact. Rear-mounted cushion push block also available for tandem pushing.



No. 9 ripper—5-position clevis, selection of shanks and tips, quick-change features adapt No. 9 to a variety of materials and conditions . . . results in considerable savings over drilling and blasting.

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U. S. A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

Compressor Manufacturers Convert Old Designs to New Applications

ARE PORTABLE COMPRESSORS headed for another period of evolution? There's been no startling break-through in basic design, but several manufacturers have announced plans to apply well-known principles to sizes heretofore untried.

The last basic change in compressor design occurred in the early 1950's when several manufacturers introduced two-stage, sliding-vane rotary models. Previously, the reciprocating-type compressor had dominated the portable scene.

Now, two manufacturers are turning out the latest innovation—the screw-type compressor—and a third firm is making single-stage, sliding-vane rotary compressors with boosted capacities.

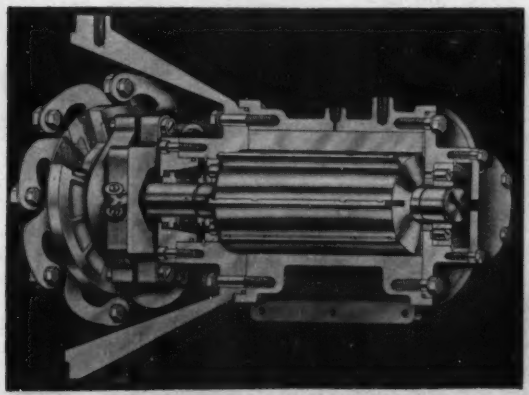
Ingersoll-Rand has aimed its new compressor at the top of the size ladder—1,200 cfm. Gardner-Denver is covering both the big and small with 125, 600, and 900-cfm screw-type models.

And Worthington, the manufacturer who is banking on the single-stage, single-rotor, sliding-vane design in the smaller size ranges, has introduced 85, 125, and 250-cfm models.

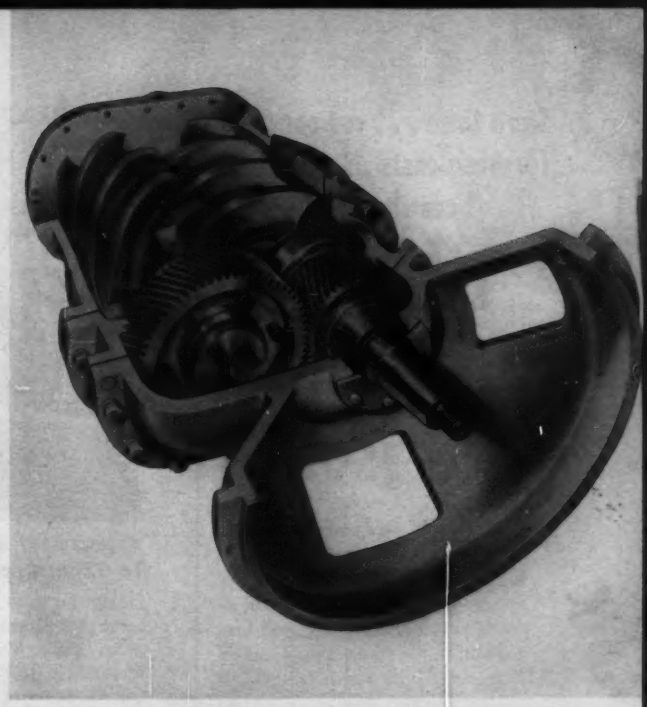
Which development will prove most effective? Only field tests by the nation's contractors can determine that.

One-stage sliding-vane rotary compressors have been time-tested by many firms—but only with models producing less than 100 cfm.

The screw-type design isn't new, either. It has been widely used for large stationary models, and a few European companies have had portables on the market for some time. But in this country, the portable screw-type compressor is making its debut.



SINGLE-STAGE ROTARY-VANE TYPE has one cylinder, one rotor, two bearings, and one set of blades. It has only 79 parts, as compared to 213 in the two-rotor, two stage vane models. The result is a machine 20% lighter that requires less maintenance.



SCREW-TYPE MODEL has pair of rotors, one directly connected to the engine, the other performing as a sealing rotor. Timing gears drive the secondary rotor as the main rotor revolves. The lobes mesh with the grooves to compress air in a single stage.

Meshing Rotors Key to Screw Types

The heart of the single-stage, screw-type compressor is a mechanism containing two rotors. The main rotor, connected to the engine, drives a second one that serves as a sealing rotor.

The main rotor has four male lobes extending around its periphery, similar to the threads of a screw. The secondary rotor has six screw-type female grooves around its periphery. As the main rotor revolves, driving the secondary rotor by timing gears, the four lobes mesh with the six grooves. This is the action that compresses air. The air is drawn in from ports by the main rotor and pressurized by the action of the lobes meshing with the grooves at speeds of 1,100 to 1,800 rpm.

The revolving rotors force the air into succeedingly smaller interlobal spaces, thus compressing the air in a single stage until full compression is reached at the outlet port.

In its new single-stage, sliding-vane line, Worthington has cut the number of parts from 213 to 79. The new compressors are 20% lighter than previous models. Worthington's new models eliminate gears and an oil pump. The firm is backing its new compressors by issuing the purchaser a one-year warranty.

What should prove just as interesting as the newly released compressors is where they go from here. Gardner-Denver has already discontinued its rotary-vane compressor line, ranging between 125 and 900 cfm; I-R tacked its 1,200-cfm screw compressor onto its present rotary-vane line that ranges up to 900 cfm; and Worthington is continuing to make two-stage rotaries up to 900 cfm.

◀ *Circle 186 on Reader Service Card*

Save time . . . cut concrete forming costs . . . Be sure of results with . . .

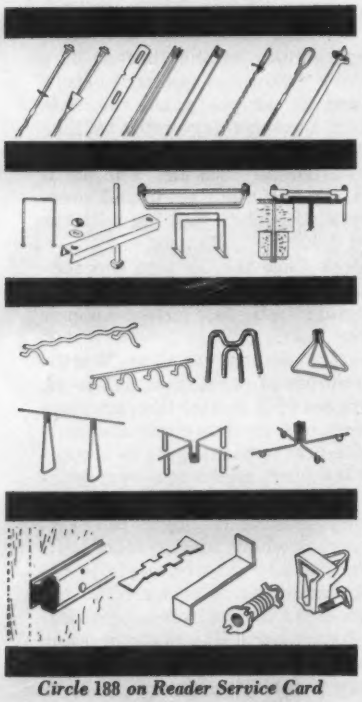
DAYTON SURE-GRIP Accessories

Concrete forming costs going up? We can help you bring them down with a combination of technical service, a complete line of accessories of recognized quality, and fast, reliable service from a *single* source. That source is your nearby DSG Distributor. He can help you eliminate delays and mistakes in planning, procurement and form production.

Cut your forming costs . . . have the dependable accessories you want when you want them by relying on Dayton Sure-Grip. Write today for our free catalog and prices.

THE DAYTON SURE-GRIP & SHORE CO.

113 KERCHER ST., MIAMISBURG, OHIO



Circle 188 on Reader Service Card

EQUIPMENT NEWS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.



Attachment Lays Cable To 72-in. Depths

Designed to lay telephone or power cable, plastic, copper, or aluminum pipe and conduit without trenching, this line of attachments fits all crawler tractors. A special cable-laying shank mounted on the tool beam of an ATECO ripper opens up a cut and buries the cable in one continuous operation. Shanks for burial depths to 72 in. are available.—American Tractor Equipment Corp., 9131 San Leandro Blvd., Oakland 3, Calif.

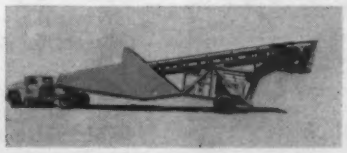
Circle 322 on Reader Service Card



3-Yd Loader Added to Line

Third in Thew's Moto-Loader series of rubber-tired, four-wheel-drive tractor shovels is the Lorain ML-309. It can lift 18,000 lb and carry 9,000 lb. The 3-yd machine is powered by a 175-hp Cummins diesel engine and is steered by twin hydraulic cylinders mounted on the rear axle. —The Thew Shovel Co., Lorain, Ohio.

Circle 323 on Reader Service Card



Loader Offered With Three Conveyor Belt Widths

The Roughloader, a conveyor loader for bulldozer push charging in shallow cuts, is available in three sizes, with 42, 48, and 60-in. belt widths. A 48-in. Roughloader has been clocked loading out 30 yd of material in 30 sec. Troughing and impact carriers are closely spaced to handle heavy material, including boulders and compacted clayey chunks. Power is applied to both sides of the head roll, eliminating shaft and roll breakdown. — Koehring Co. of California, 2207 Country Club Blvd., Stockton, Calif.

Circle 324 on Reader Service Card



Small Mixer Mounted on Tires

This 6-ft plaster or mortar mixer has a mixing drum 28 in. in diameter by 30 in. in length. The drum shaft rotates on ball bearings. The mixer is mounted on two 4.00x12 pneumatic tires and can be equipped with drum liner or rubber mixing blades.—Gilson Brothers Co., Plymouth, Wis.

Circle 325 on Reader Service Card

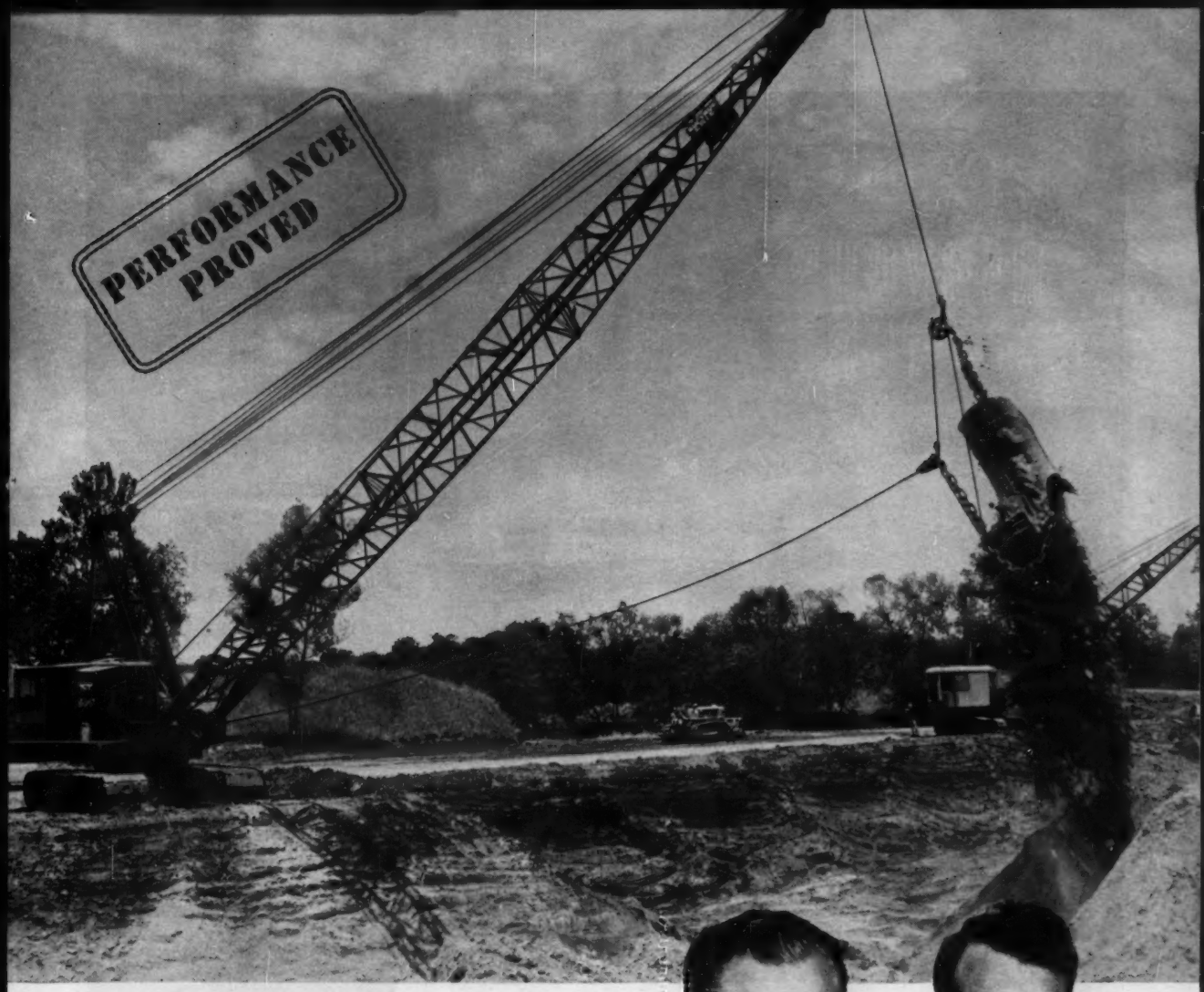
Slurry Gun Sprays Paint, Plaster, Waterproofing

The Spray-Tex, a portable slurry



and texture gun, is designed for spraying acoustical plaster, waterproofing, sand finish coats, and texture paint. Weighing 125 lb, the Spray-Tex has adjustable feed control on the hopper and a built-in compressor driven by a 1-hp, 110-v. electric motor. Price. $375—Air Placement Equipment Co., 100 W. 25th St., Kansas City 8, Mo.

Circle 326 on Reader Service Card



This 21000-powered Bucyrus-Erie dragline is swinging a 3-yd bucket on a stripping operation south of Seagoville, Texas.



H. GLENN BUTLER



CLARK FINDLEY

"20% more production on 40% less fuel with our Allis-Chalmers 21000 diesel"

... says Butler-Findley Co.

Repowering a Bucyrus-Erie 54-B dragline with an Allis-Chalmers 21000 diesel boosted stripping operations 20 percent for Butler-Findley Co., Dallas, according to Clark Findley, superintendent and production manager. "This engine has given a good old machine new life and stamina," said Mr. Findley.

H. Glenn Butler adds, "Not only that, we are realizing fuel savings of over 40 percent! The 21000 uses less than 5 gal. per hour compared with over 8 gal. for engines in our other machines of the same capacity. We get more work done with much less operation expense, which means dollars to us."

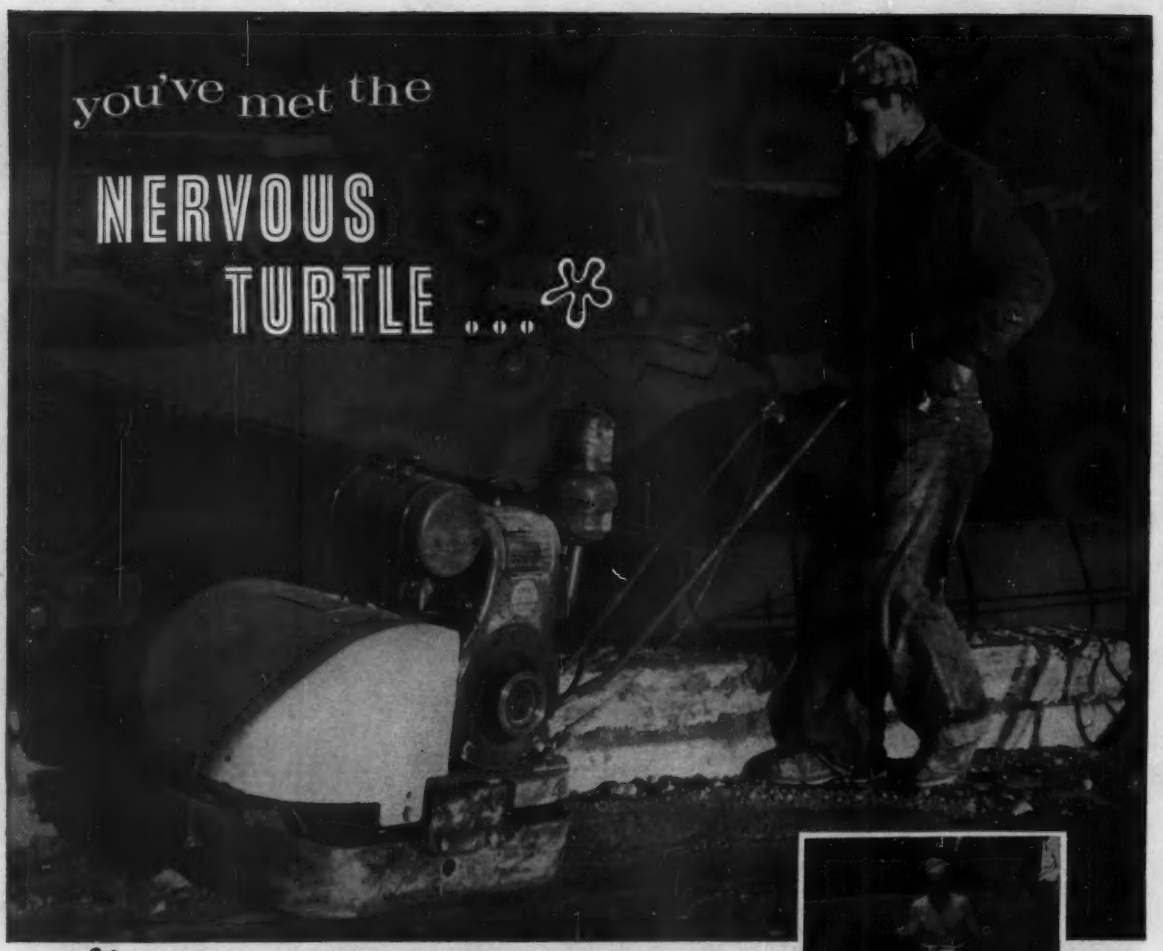
If you want to boost production and save money doing it, talk to your dealer about powering with a modern Allis-Chalmers diesel. Allis-Chalmers, Milwaukee 1, Wisconsin. BC-35

ALLIS-CHALMERS

POWER FOR A GROWING WORLD

you've met the

NERVOUS TURTLE . . .*



*alias TERRAPAC CM-20

. . . only vibratory compactor that handles both clays and granular materials

Compaction at its best! You're sure of it every time when the "Nervous Turtle" does the work. This heavy-duty Terrapac CM-20 compactor simply jumps at chances to show its terrific ability on jobs other machines shy away from. Self-propelled for safe, easy one-man operation, the "Nervous Turtle" delivers a 6,600 lb. compaction wallop at a working speed up to 75 feet a minute. It handles all types of fill with ease and will penetrate up to 30 inches or more—depending on the material—in one or two passes. Ask your Vibro-Plus distributor to demonstrate a "Nervous Turtle" on your next job.

NO COMPARABLE MACHINES ON THE MARKET TODAY!



"Nervous Turtle" shown above, is ideal for work close to foundation walls, abutments, over pipe, etc.

Ad 41-7

VIBRO-PLUS VB TERRAPAC

VIBRO-PLUS PRODUCTS, Inc.

STANHOPE, NEW JERSEY

WORLD'S LEADING MANUFACTURER OF VIBRATORY EQUIPMENT FOR OVER TWO DECADES.

◀ *Circle 189 on Reader Service Card*

Circle 190 on Reader Service Card

EQUIPMENT NEWS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.



Trencher Digs 32 In. Deep

Powered by either a 4-hp Kohler or Clinton engine, the Digz-All portable trencher will dig 3 in. wide and 32 in. deep. Weighing 345 lb, the trencher is 57 in. long with the boom raised. Overall height is 35 in. Wind-King Mfg. Co., Merrill, Iowa.

Circle 327 on Reader Service Card



Blasting Device Extends Bedrock Depth Measurement

The Blaster, the device on the left, greatly extends the range of the Model 117 self-powered seismic timer (right) for overburden and subsurface materials classifications studies. Using an instrumented sledge hammer rather than the Blaster, the timer is limited to 100-ft bedrock depth determinations. The Blaster is a battery-operated, capacitor-discharge type, good for thousands of shots without battery replacement. It has a built-in circuit tester, ready light, and positive, three-switch safety feature. The Blaster is available in two-cap capacity, for seismic work, or in multi-cap capacity for large shots. —DynaMetric, Inc., 2955 E. Colorado Blvd., Pasadena, Calif.

Circle 328 on Reader Service Card

"JENNY® MAKES HUNDREDS OF DOLLARS DIFFERENCE" in the resale price of used heavy equipment at the Gil Boers Equipment Co., Chicago. Relying on a Series "3500" Hypressure Jenny



Steam Cleaner for speedy and thorough cleaning of compressors, cranes, scrapers, tractors and other equipment, Assistant Sales Manager Ernest Barthel says, Jenny "is the difference between selling or not . . . means hundreds of dollars difference." The "3500" Jenny delivers up to 250 gph as a steam cleaner and up to 360 gph as a hydraulic cleaner, with pressures up to 300 pounds and temperatures up to 325° F.—right for all heavy cleaning. To find out how Jenny can cut your equipment reconditioning time and speed sales, mail coupon.

hv

HOMESTEAD VALVE MANUFACTURING COMPANY
Hypressure Jenny Division—Coraopolis, Pa.
(In Canada: Hypressure Jenny Sales & Service, Ltd., 517 Jarvis St., Toronto 5, Ontario.)



Please send me full data on the Series "3500" Hypressure Jenny Steam Cleaner 104

Name..... Title.....

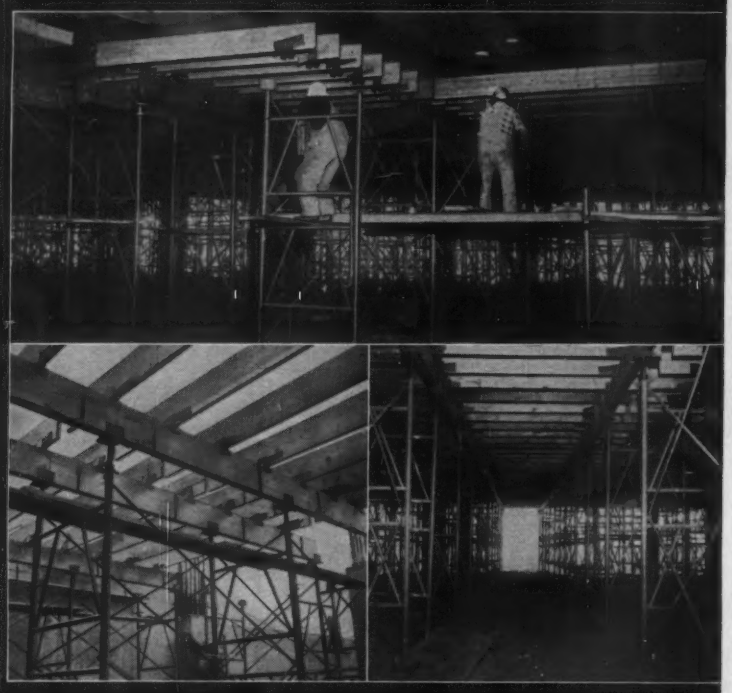
Company.....

Address.....

City..... Zone..... State.....

Circle 191 on Reader Service Card

here's DOUBLE shoring capacity!



SAFWAY HEAVY DUTY FRAME SHORING

carries loads on 50% fewer frames; cuts erection and dismantling time

CARRYING up to 20,000 lbs. per frame, this equipment has *twice the capacity* of standard steel frame scaffolding. Thus any given load can be supported on *half as many frames*... with corresponding savings in assembly and dismantling time, transportation and storage. Also, heavier beams, slabs, roofs, etc., can be shored safely at virtually any height.

LOAD DISTRIBUTION—Frames carry 10,000 lbs. on each vertical leg—or 5,000 lbs. per leg plus 10,000 lbs. on high load-bearing top horizontal.

FEW PARTS—Only 3 frame sizes with screw jacks meet all job height requirements.

PRECISION HEIGHT ADJUSTMENT—With heavy duty screw jacks at the top, bottom or both.

TOOL-LESS ASSEMBLY—Frames mount on coupling pins; cross-braces mount on studs with wing nuts.

SAFWAY

SAFWAY STEEL PRODUCTS, INC.
6228 W. STATE ST., MILWAUKEE 13, WIS.

WRITE FOR BULLETIN 116A



Circle 192 *on Reader Service Card*

New Product Briefs

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

ADDED POWER to the Model C Tournapull now gives it a power-to-weight ratio of 307 lb-per-hp. The GM V-71 engine output has been increased from 270 to 290 hp. — LeTourneau-Westinghouse.

Circle 329 *on Reader Service Card*

HEATED ASPHALT ROLLER will operate for 9 hr on one 20-lb LPG cylinder. The roller is designed for use as either a finishing roller or a one-man paver. — Aeroil Products Co.

Circle 330 *on Reader Service Card*

TWO-WAY RADIO, the "Walk'N Talk", consists of a pair of pocket-size, 9-transistor, transmitter-receiver units for operation in the 27-mc band. Height: 6½ in. Weight: 18 oz. Price: $159.95, includes two units and accessories—Dorsal Electronics.

Circle 331 *on Reader Service Card*

BACK RIPPERS that mount on the rear of dozer blades now are available through International Harvester dealers for installation on the International line of tractors.—Preco.

Circle 332 *on Reader Service Card*

ELECTRIC CONCRETE VIBRATOR, model EVUO5, is powered by a Universal ½-hp motor delivering up to 10,000 vpm. It is recommended for use on small pours and in hard-to-reach areas.—Marvel Equipment Co.

Circle 333 *on Reader Service Card*

TORQUE CONVERTERS, for handling loads from 100-700 hp, have torque multiplication ratios from 2.3:1 to 3.5:1. The converters are single-stage, three-element type. —Rockford Clutch Div., Borg-Warner Corp.

Circle 334 *on Reader Service Card*

NEW ENGINES, either General Motors 12V-71, 430-hp diesel, or Cummins NVH, 450-hp diesel, are available for Michigan 380 tractor dozers. Previously a 375-hp diesel was used.—Construction Machinery Div., Clark Equipment Co.

Circle 335 *on Reader Service Card*

LE ROI LRD-3 for powerful, deephole rotary drilling

Here's the *big* rig . . . completely self-contained for putting down hole as large as 7⅞ in. to 100 ft. depth!

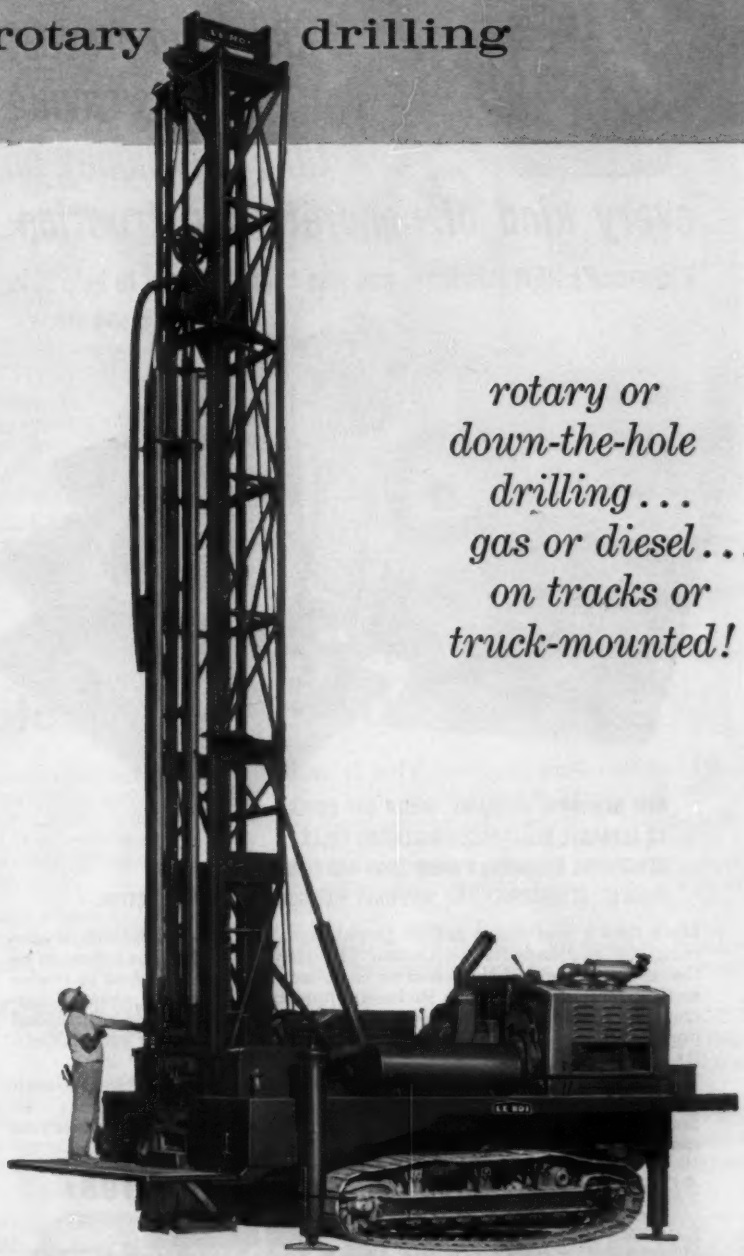
The LRD-3 is available with either crawler or truck mounting. An enclosed cab can be furnished to provide all-weather protection for the operator while drilling. All controls are conveniently grouped for easy operation and good visibility.

The traveling head design of the LRD-3 provides positive mechanical power without excessive torque loss under heavy pulldown, and permits easy control in making up and breaking down drill pipe. Every function of the unit is designed to speed productive drilling and keep the operator making hole. Leveling, raising the mast, and even the automatic drill pipe magazine are hydraulically controlled for speedy operation. A powerful dust collector traps cuttings and blows them well away from the unit.

An extra-sturdy 4-speed chain-hydraulic pulldown puts up to 30,000 lbs. of pressure on the bit of the LRD-3. A rugged dual-range transmission provides rotary speeds from 9 to 168 rpm in a selection of 10 forward and 2 reverse speeds.

Where needed, the rotary bit can be quickly changed for a powerful down-the-hole drill. A Le Roi 100 hp dual-manifold air compressor provides plenty of 100 psi air for punching through tough rock with the down-the-hole drill, or it can be set to deliver 625 cfm of 40 psi air for fast, efficient removal of cuttings in rotary operation.

The LRD-3 comes complete with a hydraulically operated magazine with capacity for four 20 ft. drill pipes, and can be equipped with such optional equipment as lights for night-time operation, a mounted bit grinder, air hoist, breakout tongs, water injection system, etc. Specification Sheet AT-147 describes the unit in detail, with complete spec information. Send for a copy.



rotary or down-the-hole drilling . . . gas or diesel . . . on tracks or truck-mounted!

LE ROI

division of Westinghouse Air Brake Co. Sidney, Ohio

Circle 193 *on Reader Service Card*

NEW RICHMOND HANDBOOK NOW AVAILABLE!



Every minute of the day... a Richmond product is saving time and money on every kind of concrete construction.

Richmond's NEW Handbook has also been designed to help save you time and money!



NEW HANDBOOK CONTAINS, UNDER ONE COVER, 12 SEPARATE MULTI-PAGED BULLETINS FULLY DESCRIBING RICHMOND'S MORE THAN 400 FORM-TYS, ANCHORS, INSERTS, ACCESSORIES AND SUPPORTS FOR CONCRETE CONSTRUCTION.

More than a year and a half in preparation, our NEW Handbook is now completed and ready for distribution. This Handbook, which we believe to be the most comprehensive ever to be compiled, has been prepared in twelve sections, each dealing with a Richmond product category or a phase of concrete construction. Whatever your concreting needs, you will find a Richmond product in this Handbook which will be completely suitable for your particular application.

There are more than 400 Richmond-engineered products, developed through 50 years of experience, listed in the Bulletins of our NEW Handbook . . . all designed to help you save time and money safely in every kind of concrete construction.

50 YEARS OF PROGRESS **1911-1961**

Write for your FREE copy of Richmond's NEW Handbook, or help with any specific concreting problem. There are more than 25 Richmond Field Engineers, in addition to a service network of more than 500 Richmond Dealers, always ready to help you.

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Circle 194 *on Reader Service Card*

NEW PRODUCT BRIEFS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

PUSH DOZERS, the No. 8C and No. 9C for Cat D8 Series H and D9 Series E tractors incorporate a single lift cylinder for hydraulic controls, allowing operators improved vision.—Caterpillar.

Circle 336 *on Reader Service Card*

MANUAL WELDING GUN, air-cooled, is designed for gas-shielded metal-arc welding of thin-gage ferrous metals. Model AH30-A uses .035-in. and .045-in.-dia wires and is rated at 300-amp dc.—Airco.

Circle 337 *on Reader Service Card*

SELF-PRIMING PUMP, 1½ in. is available on steel skid base or semi-pneumatic tires. The priming operation on this light-weight pump is controlled by natural hydraulic action.—Essick.

Circle 338 *on Reader Service Card*

COOLING SYSTEM for non-radiator cooled engines keeps temperatures constant, regardless of load or ambient temperatures. Flo-Matic is available for 14 engines.—International Harvester.

Circle 339 *on Reader Service Card*

PLATFORM LADDERS with improved hinge design are offered in heights from 4 to 16 ft, with 16x18-in. platform. The side rails on Type H ladders are secured to each other by the hinges.—Dayton.

Circle 340 *on Reader Service Card*

JIG SAW has high cutting speed of 3,200 strokes a min for wood, low speed of 2,600 for metal. Model 160 can cut 2½ in. in wood, ¾ in. in aluminum, ¼ in. in steel. Price: $99.50.—Skil.

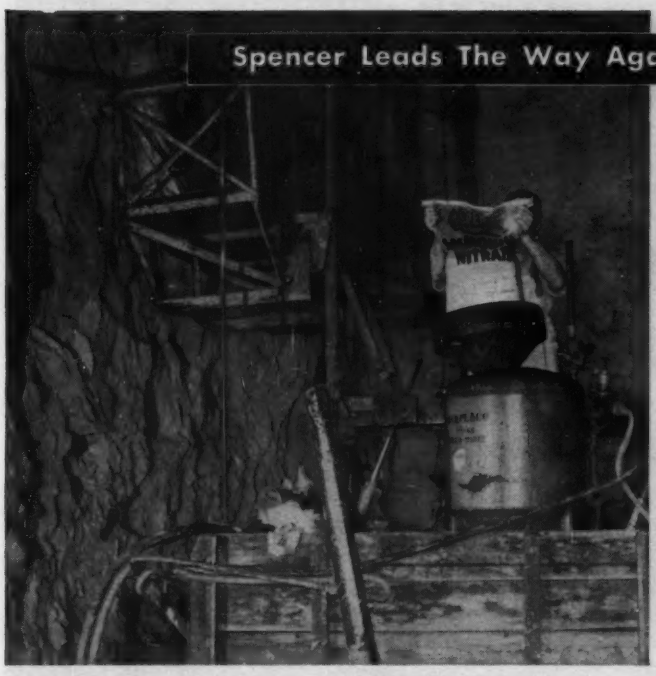
Circle 341 *on Reader Service Card*

TWO-WAY RADIO provides up to 35-w output. The Outercom FM 50A, less antenna, costs $395, including microphone plus a built-in power supply for use on 6 or 12-v dc or 115-v ac.—Outer-com.

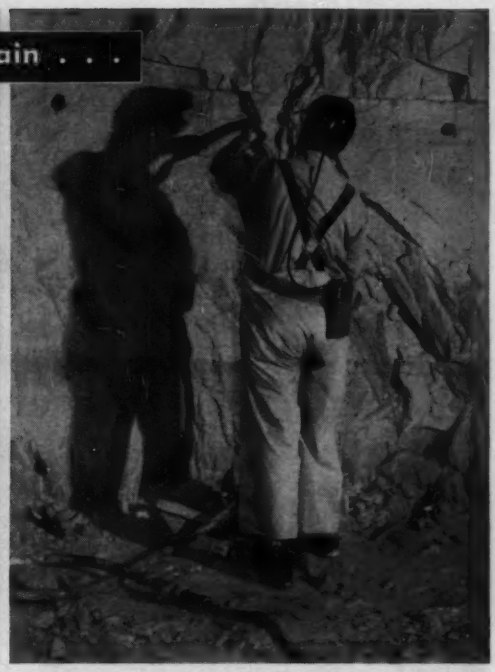
Circle 342 *on Reader Service Card*

BLOWER to aid in burning logs and brush in land clearing operations produces 29,000 cu ft of air a min. The Turn-A-Spray is full-revolving and bolts onto a flat-bed truck or trailer.—Besler.

Circle 343 *on Reader Service Card*



A two-man team makes short work of filling blast holes with a Spencer Powder Monkey pneumatic machine and Spencer N-IV Ammonium Nitrate and fuel oil mixture. This is the fastest, most economical loading method known.



No tamping required! Spencer N-IV and fuel oil compound loaded with a pneumatic machine completely fills the holes to the proper density for maximum blast efficiency.

Now Spencer N-IV Goes Underground . . . Cuts Explosive Costs 40% to 50%

Leading the way to lower costs in underground blasting, Spencer's technical experts began more than three years ago to pioneer the use of Spencer N-IV Ammonium Nitrate and fuel oil mixtures in sub-surface mines. Today, Spencer N-IV is being successfully used in many underground mining operations.

The successful application of an ammonium nitrate and fuel oil mixture in underground blasting depends on:

a. A special grade ammonium nitrate such as Spencer N-IV.

b. The technical service experience of Spencer personnel who have handled millions of pounds of N-IV in underground mining.

Spencer N-IV should be used only in underground blasting applications such as limestone, salt, potash, granite, iron ore, gypsum, copper and uranium. This ammonium nitrate and fuel oil blasting agent is in no way to be construed as a permissible and is not to be used in underground coal mining.

Here are some of the important advantages of using Spencer N-IV Ammonium Nitrate and fuel oil in underground mining:

1. Explosive costs are reduced 40% to 50% when Spencer N-IV and fuel oil mixture is used instead of dynamite. Compared on a pound for pound basis with dynamite, Spencer N-IV produces at least equivalent performance, yet the per pound price of Spencer N-IV is far less.

2. Drilling costs are lowered because Spencer N-IV provides reliable blasting in small diameter holes where formerly dynamite was required. The uniform, round prills of Spencer N-IV flow freely to permit ideal loading density in holes as small as 1⅜ inches in diameter.

3. Faster, more economical loading is achieved by using Spencer N-IV to fill horizontal blast holes with a pneumatic loading machine — such as the Spencer Powder Monkey. For example, where this advanced loading method is being used, operators report that more than 250 holes can be filled and blasted in a regular eight-hour shift. More than 40 Spencer Powder Monkeys are presently in operation in underground mines.

4. Fragmentation is excellent — using Spencer N-IV for underground blasting, experience indicates that fragmentation results are equal or superior to those produced by dynamite.

For up-to-date information on lowering your underground blasting costs with Spencer N-IV Ammonium Nitrate and fuel oil mixtures, just return the coupon below.

SPENCER

Spencer Chemical Company
409 Dwight Bldg.
Kansas City 5, Missouri

Please rush me the latest information on cutting underground blasting costs with Spencer N-IV and fuel oil mixtures.

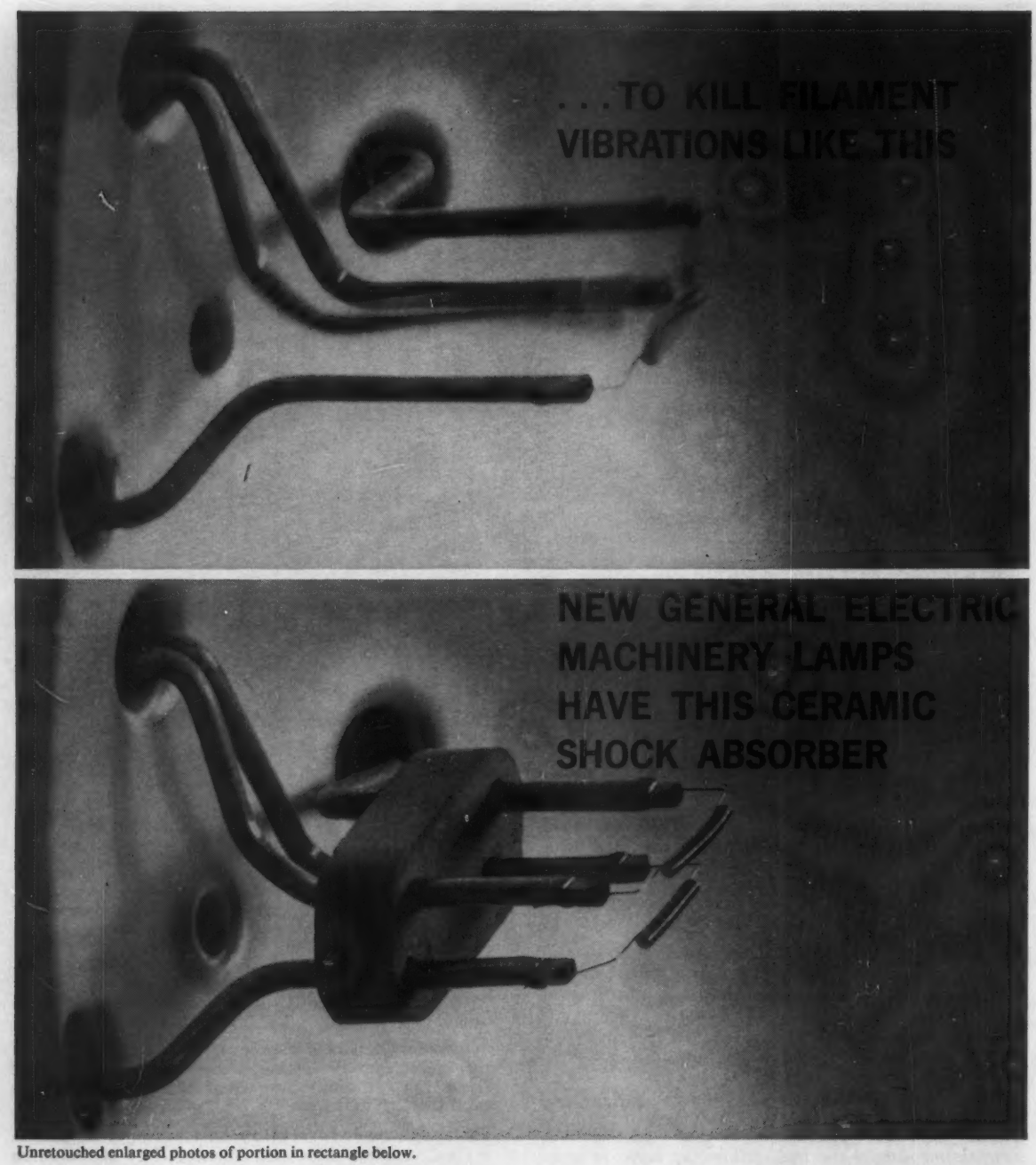
Name_____

Firm_____

Address_____

City_____ State_____

Circle 195 on Reader Service Card



Unretouched enlarged photos of portion in rectangle below.



These photographs show why the filaments in the new General Electric construction machinery lamp (bottom photo) can last up to three times as long as those in old style lamps (top photo). Although both lamps are being subjected to the same vibration in this test, the ceramic shock absorber in the new G-E lamp holds the lead wires steady. Much less road shock and engine vibration are transmitted to the filaments, so they last longer.

The new G-E lamps with this ceramic shock absorber *cost no more* than the old style sealed beam construction lamps you're now using. These new construction equipment lamps are available from your General Electric lamp supplier. Ask him for the new G-E lamps with the shock absorber . . . the lamps that last longer than the old style construction lamps but cost no more. These are headlamps #4480 (12-volt) and #4880 (24-volt) and floodlamps #4478 (12-volt) and #4578 (24-volt). General Electric Co., Miniature Lamp Dept. M-120, Nela Park, Cleveland 12, Ohio.

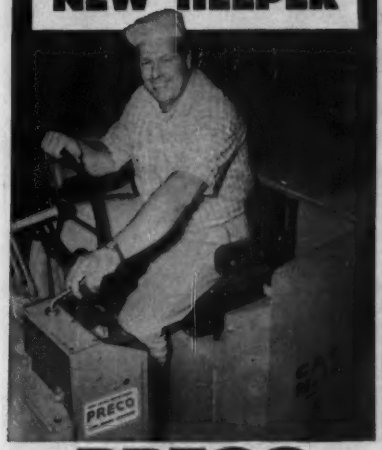
Progress Is Our Most Important Product

GENERAL ELECTRIC

Circle 196 on Reader Service Card

MOTOR GRADER OPERATORS!

MEET OUR NEW HELPER



PRECO

AUTOMATIC BLADE CONTROL

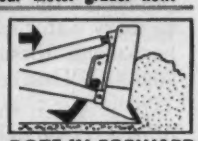
It's a slope-holder, time-saver, cost-cutter, and grading engineer! It gives me a third hand in the operation of my grader.

The PRECO Automatic Blade Control maintains cross slope accurately and AUTOMATICALLY! I just set the dial and go to work. It leaves me free to use my judgement — and both hands — to handle the material and produce a smooth longitudinal grade.

Effective on all work, from roughing in and spreading material to rigidly controlled fine grading, the PRECO Blade Control helps me get the job done easier, faster, more accurately, and at less cost. PRECO also helps me help my boss by permitting savings in engineering and staking costs — I need only one row of blue-tops for even the most precise grading. The PRECO also helps produce smoother surfaces; this, in turn, allows uniform thicknesses of base and paving materials, and substantial savings in both.

Proved, dependable, and easy to service, the all-transistor PRECO Automatic Blade Control is available on Caterpillar and LeTourneau-Westinghouse Motor Graders. Hire this efficient, productive helper today. Get a PRECO Blade Control installed on your motor grader now.

PRECO makes it easier for dozer operators, too! PRECO Back Rippers eliminate "deadhead" dozer reverse. They give you two-way, doubly-effective dozer production — forward and reverse. To look good in the cut and on the ledger get your tractors equipped with PRECO Back Rippers now.



DOZE IN FORWARD



RIP IN REVERSE

WRITE, PHONE, OR CABLE FOR ALL THE PRECO FACTS OR SEE YOUR PRECO DEALER

PRECO INCORPORATED

6200 E. SLAUSON AVE., LOS ANGELES 22

Circle 257 on Reader Service Card

NEW PRODUCT BRIEFS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

POCKET PENETROMETER can be used as field check for classifying various soil types by resistance to penetration. The 6½-in-long instrument is graduated in tons per sq ft and kg per sq cm. —TESTlab.

Circle 344 on Reader Service Card

SUBMERSIBLE DEWATERING pump, Model 3VS1, is powered by a 5-hp electric motor. The unit weighs 128 lb and has a capacity range of 10 gpm at 120 ft of head to 300 gpm at 10 ft of head.—Gorman-Rupp.

Circle 345 on Reader Service Card

TRANSCEIVER fits a standard shirt pocket. The Telepath PM-A weighs 12½ oz, complete with 9-v battery and 2½-in. speaker-mike combination. A telescoping antenna extends to 40 in. Price: $125.—Seiscor.

Circle 346 on Reader Service Card

CONCRETE GRINDER finishes monolithic and epoxy terrazzo, as well as concrete slabs. For greater efficiency, an additional 200 lb can be added to the 275-lb Hydro Grinder. — Equipment Development.

Circle 347 on Reader Service Card

PINNING DEVICE for securing tips on Cat No. 8 and No. 9 rippers are installed or removed within one min. The pin is bent slightly at the center to achieve locking and is flanged at each end. —Caterpillar.

Circle 348 on Reader Service Card

TWO-WAY RADIO, weighing 20 oz, features a collapsible telescoping antenna and an external antenna jack. A 100-milliwatt transmitter on the DUO-COM 1005 ranges up to 5 mi. Price: $119.50. —Osborne.

Circle 349 on Reader Service Card

AIR-COOLED ENGINE, the 9½-hp K241S, is available in an electric start model, the K241S. The unit is equipped with 12-v starter-generator, battery-charging current regulator, and control panel. —Kohler.

Circle 350 on Reader Service Card

Again...

SIMPLEX-WACO

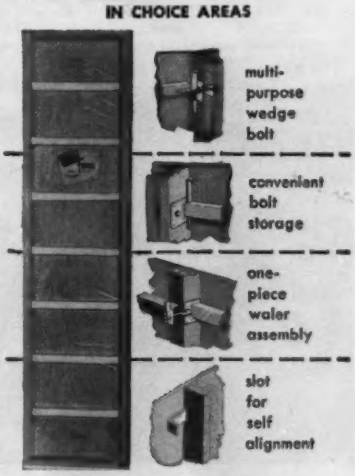
Comes Through on a Big One



adaptability and flexibility of Simplex-Waco Forms proved on giant shopping center

- Simplex-Waco Forms went up with ease in forming 32' battered wall and counterforts at suburban Minneapolis' Southdale Shopping Center.
- Robertson Q. panels nailed to Simplex-Waco panels to produce architectural finish in other parts of project.
- Forms were used both vertically and horizontally . . . proving Simplex-Waco flexibility! Over 26,000 sq. ft. of forms used on this project.
- Forms available on sales or rental/purchase plan.

DISTRIBUTORSHIPS OPEN IN CHOICE AREAS



Send Your Plans for Free Layout and Cost Estimate

Simplex Waco SIMPLEX INDUSTRIAL FORMS, INC.

5629 Industrial Avenue

Rockford (Loves Park) Illinois

Circle 197 on Reader Service Card

The **HEART** *of any solution to seepage water*
IS THE PUMP ON THE JOB!



Marlows WORK NIGHT AND DAY

Keep monster trench workably dry!



These engine-driven Marlow self-priming pumps operate on a 24-hour schedule to control seepage water.

The giant Niagara Power Project called for the construction of a $141,000,000, four-mile-long conduit waterways system. Trenches were dug in four separate sections to accommodate huge 46 foot by 66 foot concrete conduits. They will carry water from the upper Niagara north to the Tuscarora Pumping and Generating Plant.

When seepage water became a serious problem on one section, Merritt-Chapman & Scott Corporation installed big Marlow self-priming pumps to keep the area workable. On another section of the project, Gull Contracting Company and L. G. Defelice and Sons, Inc. used Marlow self-primers in the trenches. Operated to carry water over a 75-foot embankment, these pumps handled 90,000 GPH on continuous service.

In addition to a complete line of AGC rated pumps, Marlow also builds the famous "Mud-Hog" diaphragm pump. For full information, write today for Bulletin C-09 and the name of your Marlow dealer.

Marlow PUMPS®

MARLOW PUMPS
DIVISION OF BELL & GOSSETT COMPANY
MIDLAND PARK, NEW JERSEY
Morton Grove, Illinois • Longview, Texas

8-479

Circl 198 *on Reader Service Card*

New Publications

These catalogs and bulletins from manufacturers contain useful information about construction equipment and materials. To obtain a copy of the items you want, circle the appropriate number on the READER SERVICE CARD just inside the back cover.

PUMP—Literature describes the 2-in Aquamaster, a self-priming, portable pump with a maximum capacity of 7,200 gph. The pump is powered by a 3-hp engine and weighs 64 lb.—Universal Motor Co., Oshkosh, Wis.

Circle 351 on Reader Service Card

CONCRETE ADMIXTURE—MBR-P-3, a 48-p. bulletin, features 25 reports on Pozzolith's role as a concrete improving admixture on major dams in the U.S., Japan, Canada, Alaska, and South America. — The Master Builders Co., Cleveland 18, Ohio.

Circle 352 on Reader Service Card

MARINE PRODUCTS—An 8-p catalog lists marine construction products available from L. B. Foster. Complete specifications are given for light and heavy sheet pile for shore protection, boat wells and other shoreline applications. The catalog also lists structural pipe, pipe piles, pontoon pipe, dredging pipe, precast concrete slabs, and accessory materials such as wales, braces, and couplings. Tools available for purchase or rental to install piling and piers are also included. Write for catalog H-8640.—L. B. Foster Co., P.O. Box 1647, Pittsburgh 30, Pa.

Circle 353 on Reader Service Card

RIPPER—A heavy ripper for use with International TD-25 crawler tractors is the subject of Bulletin GR-25-160. The hydraulically controlled attachment has a maximum ripping depth of 4 ft with straight shanks or 2 ft with curved shanks.—The Greenville Steel Car Co., Greenville, Pa.

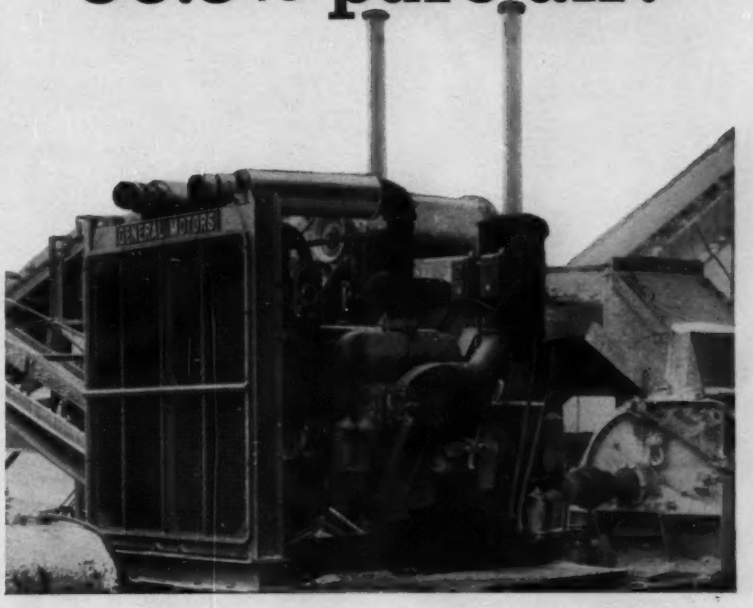
Circle 354 on Reader Service Card

HOISTS—An 8-p. brochure contains specification tables for all Coffing models in lever, power, and hand chain hoists. Catalog 600 also includes spec tables for hoist accessories and I-beam trolley attachments. — Coffing Hoist Div., Duff-Norton Co., Gateway Four, Pittsburgh 22, Pa.

Circle 355 on Reader Service Card

Crusher dust gets so thick you can't breathe . . . but

Donaclones deliver 99.9% pure air!





New factory equipment on many leading makes of engines

Dust gets so thick around this ag limestone plant, it often hides the equipment. Diesel engines on crusher and hammermill used to require frequent overhaul with expensive downtime.

After Donaclones were installed, engines were operated according to the previous overhaul schedule and then examined. *They showed practically no signs of wear.*

The Donaclone's primary centrifugal cleaner removes 98% of the dust. Only 2% remains for the Duralife paper filter giving it an extra-long service life. And it can be renewed when necessary, by dunking in water and detergent.

Add years of engine life by modernizing with Donaclones.

Write for name of dealer


Side inlet model


Center tube model

Donaclone by **Donaldson**

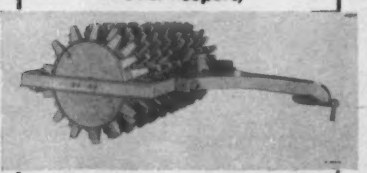
666 Pelham Boulevard • St. Paul 14, Minnesota

Circle 199 on Reader Service Card

Grace
ASPHALT
AND COMPACTION
EQUIPMENT



Roadsweepers,



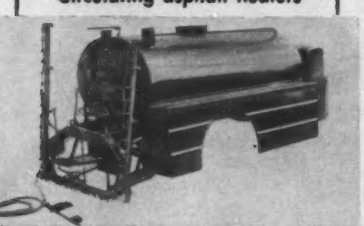
Sheepsfoot rollers



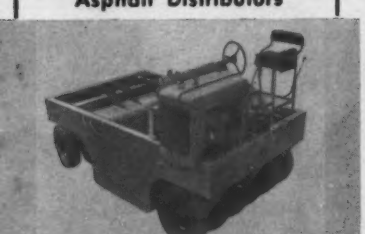
Chip spreaders



Circulating asphalt heaters



Asphalt Distributors



Pneumatic rollers, self-propelled or trailed

W. E. GRACE MFG. CO.
6100 S. Lamar St., Dallas, Tex.
Circle 200 on Reader Service Card

NEW PUBLICATIONS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

HARDFACING — Catalog ADC 955, 44 pages, describes hardfacing electrodes and wires. A description of each electrode is presented along with application data. Over 100 specific equipment parts that benefit from hardfacing are listed in an extensive section, together with the type of wear to which each is subject and the alloy needed to protect it.—Air Reduction Sales Co., 150 E. 42nd St., New York 17, N.Y.

Circle 356 on Reader Service Card

CHEMICAL GROUT — A 24-p. booklet illustrates the numerous applications of AM-9, a chemical grout. AM-9 is particularly effective for solidifying weak, granular soil masses during tunneling operations and during the sinking of caissons. Besides preventing water passage, the grout binds the particles of mass together and increases shear strength.—American Cyanamid Co., Commercial Development Div., 30 Rockefeller Plaza, New York 20, N. Y.

Circle 357 on Reader Service Card

COST ACCOUNTING — "Suggested Guide for Field Cost Accounting for Building Contractors" is a 46-p. booklet presented in three parts: preparation of the project estimate, job labor and material cost, and preparation of cost reports. Price: $2.50; $1.25 for AGC members.—The Associated General Contractors of America, Inc., 1957 E St., N.W., Washington 6, D.C.

Circle 358 on Reader Service Card

EXCAVATOR — A bulletin describes Mechanical Excavators Model 2000 wheel excavator that will dig up to 3,600 yph. The 80-ft-long machine weighs about 160 tons. The crawler-mounted unit has six 1¼-yd buckets and a 20-ft-dia wheel. — Baldwin-Lima-Hamilton Corp., Construction Equipment Div., Box L, Lima, Ohio.

Circle 359 on Reader Service Card

SCAFFOLDING — Heavy duty 10-M scaffolding, with legs capable of supporting a 10,000-lb load with a 3 to 1 safety factor is illustrated in a 4-p folder. Bulletin 73 shows how the scaffolding supports extra-heavy concrete slabs and beams, and how it is applicable to the shoring of bridges and other heavy spans. Diagrams also show how the scaffolding is assembled with a patented locking mechanism. — Beaver Advance Corp., P.O. Box 792, Ellwood City, Pa.

Circle 360 on Reader Service Card

EQUIPMENT LINE—Bulletin CL 60S details Lima's line of shovels, cranes, draglines, and vibratory compactors. — Baldwin - Lima-Hamilton Corp., Construction Equipment Div., Lima, Ohio.

Circle 361 on Reader Service Card

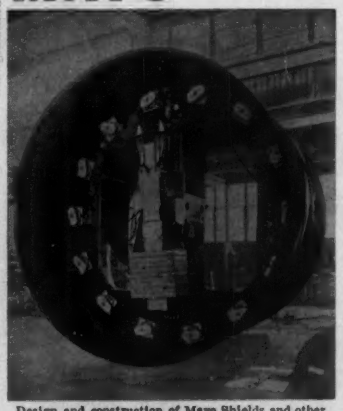
BARRICADES—This 16-p. catalog displays the entire line of Esco Flare barricades and warning lights.—Electronic Specialties Co., Batavia, Ill.

Circle 362 on Reader Service Card

CEMENT TRANSPORT—Baughman's PMCT-1 cement transport is described in bulletin A-455.—Baughman Manufacturing Co., Jerseyville, Ill.

Circle 363 on Reader Service Card

MAYO SANDHOG EQUIPMENT



Design and construction of Mayo Shields and other Sandhog Equipment are backed by over 25 years of job-tested experience throughout the world.

FREE BULLETIN No. 23a shows installation of Mayo shields, cylindrical air locks, lock doors, medical locks and tunnel cars. Send for your free copy today.

SPECIAL EQUIPMENT DEVELOPED FOR SPECIAL PROBLEMS

MAYO
TUNNEL AND MINE EQUIPMENT
LANCASTER, PENNA.

Circle 258 on Reader Service Card



7,800 FEET–660 SEPARATE CUTS A DAY!

THIS CLEVELAND J TRENCHER digs 30 house footings per day for Contractor J. C. Bowles in Dairy City, California. Each house requires 260 lineal feet of trench—22 individual cuts—which means: 660 machine moves, 660 boom hoistings, 7,800 feet of digging every day. Such performance shows these Cleveland J features pay off:

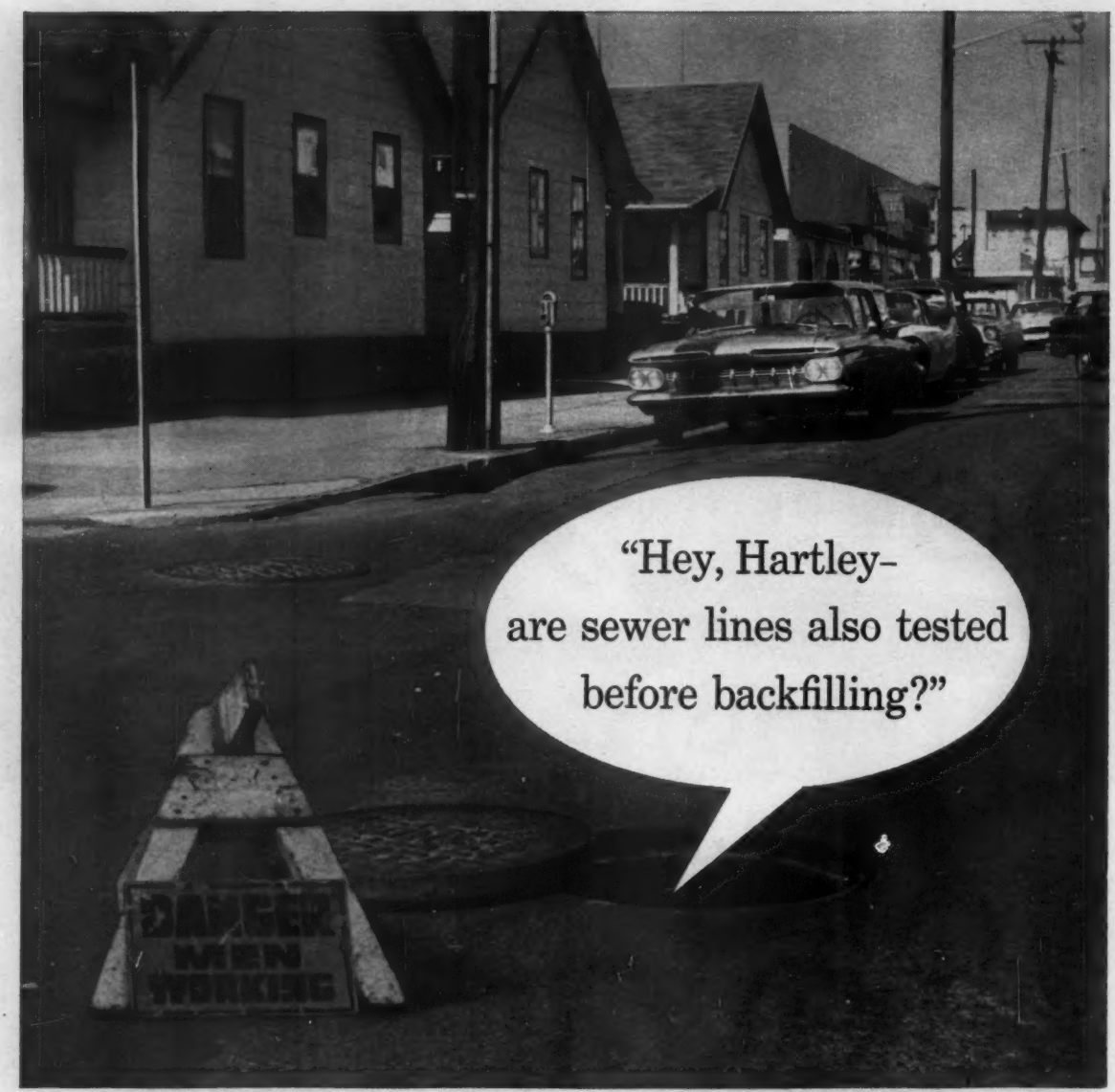
- **100% control of all operations at the operator's fingertips**
- **Full visibility for the operator**
- **Fast, full-range positive boom hoist**
- **Independent conveyor speeds to 1,000 feet per minute**
- **Big 16" x 3" hydraulic steering brakes**
- **100% anti-friction-bearing track components**
- **1,000-hour track lubrication**
- **Bushed, 1½" hardened track pins**
- **Dual track drive and support for maximum stability**
- **All speeds available in either direction**

"No other machine does this work so fast and so cheap and gives you such a clean finished job," says Bowles. He should know. His crews have dug footings for more than 100,000 houses in the last 10 years.

CLEVELAND TRENCHER

THE CLEVELAND TRENCHER CO., 20100 ST. CLAIR AVE., CLEVELAND 17, OHIO

Circle 201 on Reader Service Card



Yes! More and more specifications are calling for leakage (exfiltration) tests. Therefore, contractors have to be prepared for them.

When a line has to be tested before backfilling, contractors will usually look to Transite®, *the white sewer pipe.* You see, many have found it economically unsound to challenge a leakage "spec" with any other joint than a Ring-Tite® one. And, no wonder! This exclusive Transite joint is precision-machined instead of molded.

There have been times, and all too frequently, when materials other than Transite have virtually ruined contractors' job costs because of the time it has taken to condition a non-Transite line to eventually pass a leakage test. Incidentally, Johns-Manville is so sure of their Ring-Tite Joint, they don't consider a specification of 100 gallons/inch diameter/mile/day a tough one to meet at all.

Johns-Manville's movie—"Pipelines To Health"—tells why a Transite line is a sound investment today and for the future. It's available along with facts and data to support their claim that "Transite is designed with sewer service in mind." Write to Johns-Manville, Box 14, CM-5, New York 16, N. Y. In Canada: Port Credit, Ont. Cable address: Johnmanvil.



Test water goes in . . . stays in!



JOHNS-MANVILLE TRANSITE PIPE

Circle 202 on Reader Service Card

NEW PUBLICATIONS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

TRUCK MIXERS—Bulletins describe three new Rex truck mixers. Model 77, the economy unit of the series, is covered in Bulletin 6177P; Model 6142P illustrates the Wate-Saver; and Bulletin 6155P pertains to Model 155 for high-production output. — Chain Belt Co., Sales Promotion Dept., Milwaukee 1, Wis.

Circle 364 on Reader Service Card

TRACTOR-TRAILER—The Oshkosh W-3000 end dump tractor-trailer is featured in a brochure. The machine has all-wheel drive and braking, and the trailer body has 37 cu yd capacity.—Oshkosh Motor Truck Inc., Oshkosh, Wis.

Circle 365 on Reader Service Card

EARTHMOVERS—The No. 12E motor grader is discussed in a 12-p booklet (33799). The machine has 115 hp and a 12-ft blade. An 8-p booklet (33790) discusses the 977H crawler-mounted Traxcavator, which has a 150 hp engine and a 2½-yd bucket capacity. — Caterpillar Tractor Co., Peoria, Ill.

Circle 366 on Reader Service Card

LUBE OILS—The sixth edition of "Lubricating Oils for Industrial and Heavy-duty Automotive Engines," 75 pages, lists the names of 750 oil companies and the oil brands which they each guarantee to meet rigid test requirements. Individual copies of the booklet are available at $.35 each—Executive Secretary, Internal Combustion Engine Institute, Room 914, 201 N. Wells St., Chicago 6, Ill.

Circle 367 on Reader Service Card

MATERIALS HANDLING VEHICLES — Sheets on American Road's Econmobile Models 600 and 620 include basic information and data sheets containing a photograph, specifications, capacity, dimensions, and other technical data. Full technical information on attachments and other modifications including pallet forks, towers, aggregate buckets, and ground and aerial tools. — American Road Equipment Co., 4201 N. 26th St. Omaha, Neb.

Circle 368 on Reader Service Card

You can BID LOWER and MAKE MORE PROFIT with a DOTMAR Curb, Gutter and Sidewalk Paver

Hundreds of contractors are doing it! A Dotmar Paver cuts costs and increases profits—saves 1/3 to ½ over hand methods. Reinforcing rods can be used. Greater concrete yield.

Easy to operate. Screeds for any shape of curb, sidewalk or highway strip. Pioneers in this equipment. Send for Catalogs 57 and 161.



Dotmar paves concrete curb and gutter on expressway. A truly versatile machine. Averaged 2,000 ft. in 8 hrs.



Dotmar with extensions paves state highway median strip 4 ft. wide, 3277 ft., in 11 hrs.



Dotmar ALL NEW asphalt or concrete curbing machine.

Dotmar paving asphalt curb and gutter, 500 ft. per hr.

Makers of Dotmar Magnesium Forms



Dotmar INDUSTRIES Inc.

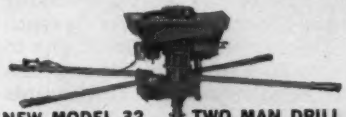
527 HANSELMAN BUILDING KALAMAZOO, MICHIGAN

Circle 203 on Reader Service Card

2 General PORTABLE DRILLS

Built for

Faster . . . Easier Digging!



NEW MODEL 32

Designed for tough, heavy duty production with less operator effort, greater handling ease and efficiency. Takes all augers up to 12" diameter.

TWO MAN DRILL

Weighs less than 50 lbs. complete with auger. Powerful 4½ hp air cooled engine. Positive safety clutch and finger-tip throttle control.

MODEL 24B

The *original*, Portable Power Drill! Digs a true, clean hole, 2½ ft. deep in less than 30 seconds! Easily adaptable to any drilling job in earth, wood or ice. Weighs 29 lbs. (less bit). Powered by a 2½ hp air cooled engine. Positive safety clutch and finger-tip throttle control.



Write for literature, prices and full information

INTERCHANGEABLE Auger Bits and Shaft Extensions available for both models. Augers available from 2" to 12" diams.

GENERAL EQUIPMENT CO.

OWATONNA 31, MINNESOTA

Circle 259 on Reader Service Card

NEW...IT'S LIKE USING A 10 TON ROLLER



2,500 times per minute, our sensational M 18 Muller Masher hits with a force of 2,700 lbs, equal to a 10 ton roller. Travels up to 75 ft./min. Compacts up to 50 cu. yds./hr., with 6" lifts. Can be used anywhere, anytime.



Write today for free brochure and prices.

MULLER MIXER

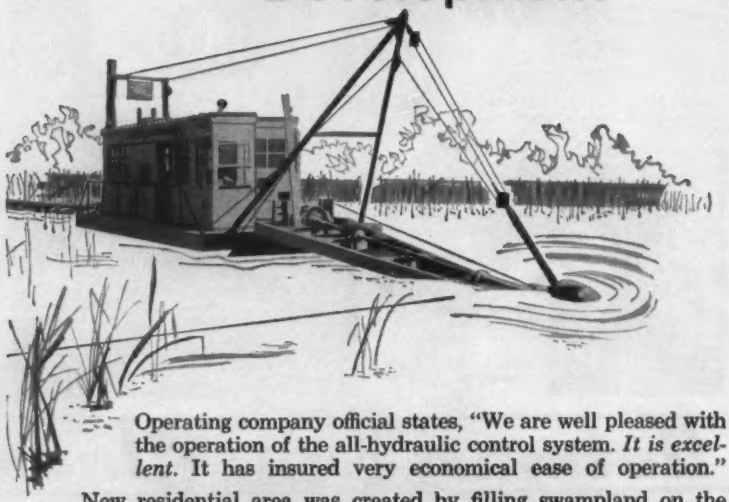
MULLER MACHINERY COMPANY, INC.

1 Whitman Ave., Metuchen 19, N. J.

Sales and Service, Nationally.

Circle 260 on Reader Service Card

Ellicott Dredge
RECLAIMS SWAMPLAND
For Residential Development



Operating company official states, "We are well pleased with the operation of the all-hydraulic control system. *It is excellent.* It has insured very economical ease of operation."

New residential area was created by filling swampland on the South Carolina coast adjacent to the Inter-coastal Waterway. The contractor, the Chatham Dredging Company, chose to handle the job with a 10" DRAGON model portable, hydraulic dredge designed and manufactured by Ellicott. Influencing the contractor's choice were field-tested, advanced design features such as complete electro-hydraulic operation with centralized controls, a two-piece rectangular hull which can be assembled either ashore or in the water, and precision machinery easily accessible for servicing . . . eliminating costly delays for maintenance of vital operating parts.

Electro-hydraulic control of all moving parts gives greater handling ease and significantly reduces operator fatigue. Man size working and walk-around space between hull and machinery permits ventilation and easy safe inspection. The 40'x16'x4' "Chatham" digs to a maximum 20 ft. depth. It can pump fill materials through pipeline up to 2500 ft. long and has a total rated output of 325 cubic yards per hour. A 319HP diesel engine provides power.

Write for Bulletin 980 for complete design details and application potential of the DRAGONS. A DRAGON may be just what you need.

E L L I C O T T D R E D G E S

ELLICOTT MACHINE CORPORATION, Baltimore 30, Maryland, U.S.A.; Ellicott-Brandt, Inc., Baltimore, Maryland; Ellicott Fabricators, Inc., Baltimore, Maryland; McConway & Torley Corp., Pittsburgh, Pennsylvania; Timberland-Ellicott, Limited, Woodstock, Ontario, Canada; Dragues Ellicott France, Paris, France; Dragas Ellicott do Brasil Ltda., Rio de Janeiro, Brazil; Ellicott de Mexico, Mexico City, Mexico.
Successors to the floating dredge business of the Bucyrus-Erie Company and the American Steel Dredge Co. Complete engineering, design and construction service.

ELLICOTT MACHINE CORPORATION
1605 Bush Street • Baltimore 30, Maryland
Send me a copy of Bulletin 980, describing the complete line of DRAGON model dredges.
Name_____
Firm_____
Address_____
City_____ Zone_____ State_____
4441

Circle 204 on Reader Service Card

Advertisers' Literature

Listed below is free material offered in this issue's advertisements received up to May 15. To get the items you want, circle appropriate numbers on the SERVICE CARD inside the back cover.

VACUUM CLEANERS — The Inside Story on a Dirty Business describes B&D's vacuum cleaners. —Black & Decker Mfg. Co.
Circle 369 on Reader Service Card

HOSE CLAMPS — A catalog details the operation and gives prices of Punch-Lok's line of leakproof hose clamps.—Punch-Lok Co.
Circle 370 on Reader Service Card

TWO-WAY RADIO—Literature fully explains the new RCA transistorized LD Mobile Radio.—Radio Corporation of America.
Circle 371 on Reader Service Card

HOSE, FITTINGS—Catalog No. 205 pertains to Aeroquip's selection of hose lines and reusable fittings. —Aeroquip Corp.
Circle 372 on Reader Service Card

PILING—Foster's array of standard piling, corners, crosses, and tees is featured in CM-6, a 24-p. catalog.—L. B. Foster Co.
Circle 373 on Reader Service Card

PANELS, TIES — A catalog explains how Uni-Form panels are locked into a tight form by Uni-Form ties.—Universal Form Clamp Co.
Circle 374 on Reader Service Card

ENGINES — Bulletin S-249 tells how to keep materials moving with rigs powered by Wisconsin engines.—Wisconsin Motor Corp.
Circle 375 on Reader Service Card

PIPE FITTINGS — Wedgelock couplings, requiring only a hammer to connect, are subject of Bulletin 59.—Naylor Pipe Co.
Circle 376 on Reader Service Card

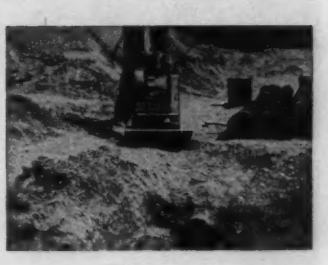
COMPACTOR — A brochure highlights the M-18 Masher that hits with a 2,700-lb force.—Muller Machinery Co.
Circle 377 on Reader Service Card

TUNNEL EQUIPMENT—Bulletin No. 23 shows installation of shields, air locks, tunnel cars, lock doors, and other items.—Mayo.
Circle 378 on Reader Service Card

4500 sq. ft. per hour...

That's TAMPING, brother!





. . . That's the kind of tamping that packs profit into paving jobs. These Stow tampers work faster, more efficiently compacting granular soil in trenching, backfill, sub-bases, foundations. Perfect for black-topped surfaces and for preparing pavement patches.

Precision engineered for top performance, the Stow T-18A tamper coordinates the engine stroke with the vibrator stroke to deliver maximum impact (2200 lbs.) to the tamping surface; is designed to propel itself along at speeds *up to 50 feet per minute* . . . while it tamps more than 4500 sq. ft. per hour!

And talk about trouble-free . . .
The Stow Tamper is powered by a Wisconsin easy-start engine . . . equipped with special fuel pump to insure efficient engine performance in all operating positions. And here's a maintenance note: gas tank is mounted underneath the engine for maximum rigidity . . . less wear and tear!

Like we said . . . "That's tamping!"
Try this revolutionary Stow Tamper on your next job. Your local distributor will be glad to arrange an on-the-job demonstration

Remember Stow T-18A Tamper compacts FASTER, MORE EFFICIENTLY, WITH LESS WEAR AND TEAR.

Call your nearest Distributor or send in the coupon TODAY! →

STOW MANUFACTURING CO.
Dept. M-1, 31 Shear St., Binghamton, N. Y.

Please send me Tamper Bulletin 593.

Name_____ **Title**_____

Company_____

Street_____

City_____ **State**_____

Circle 205 on Reader Service Card



Bethlehem roof bolts are being installed in this 8-mile-long water tunnel near South Berlin, Mass. A 54-in. steel strap allows each pair of bolts to work as a unit and distributes the support over a large area of rock.

Planning a new tunnel?

Repairing an old tunnel?

Let a Bethlehem engineer show you what roof bolts can do

Bethlehem roof bolts minimize the danger of roof falls, whether you plan on building a new tunnel, or are reinforcing or enlarging an older tunnel.

At your invitation, a Bethlehem engineer will consult with you, without obligation. He will make tests in the strata to determine whether or not the rock lends itself to bolting. And he will get your bolting crews started properly.

For the full story, all you need do is get in touch with the nearest Bethlehem sales office. Or write to us at Bethlehem, Pa.



Steel *for Strength ... Economy ... Versatility*

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

SHORT CUT TO LONG LINES



Save Work and Speed the Job with NAYLOR Pipe and Wedgelock Couplings

For air, water and ventilating lines, you'll save time and money with this NAYLOR combination.

NAYLOR pipe is light in weight, easy to handle and install. Its lock-seamed, spiralwelded structure assures extra strength and safety.



WEDGELOCK couplings provide a positive connection securely anchored in standard weight grooved ends. Speed the job. A hammer is the only tool required to connect or disconnect them. Available in low-pressure and heavy-duty types.

Write for Bulletin No. 59 on pipe, fittings and couplings.

NAYLOR PIPE Company

General Offices and Plant
1267 East 92nd Street, Chicago 19, Illinois
Eastern U. S. and Foreign Sales Office
60 East 42nd Street, New York 17, N. Y.

Circle 251 *on Reader Service Card*

AD LITERATURE . . .

Listed below is free material offered in this issue's advertisements received up to May 15. To get the items you want, circle appropriate numbers on the SERVICE CARD inside the back cover.

WARNING BARRICADES — Hazard Warning Catalog No. 61 presents information on the Dietz line of folding barricades.—R. E. Dietz.
Circle 379 *on Reader Service Card*

FORMS — Catalog 400 describes Form-Crete's line for job casting, prestressed, and custom jobs.—Food Machinery & Chemical.
Circle 380 *on Reader Service Card*

AIR RIGS—The Co-ordinated Air Power booklet describes compressors, construction tools, and drill rigs.—Schramm, Inc.
Circle 381 *on Reader Service Card*

COMPACTORS — Catalog 621 describes rammers for soil compaction. Also available is Soil Compaction Cost Data.—Barco Mfg Co.
Circle 382 *on Reader Service Card*

TAMPER — Bulletin 593 discusses the T-18A tamper, which delivers 2,200 lb impact and tamps 4,500 sq ft an hr.—Stow Mfg. Co.
Circle 383 *on Reader Service Card*

DRILL RIG — Spec Sheet AT-147 covers the LRD-3, for rotary or down-the-hole drilling.—Le Roi Div., Westinghouse Air Brake.
Circle 384 *on Reader Service Card*

EXPLOSIVES — Literature explains how to cut underground blasting costs with Spencer N-IV and fuel oil mixtures.—Spencer Chemical.
Circle 385 *on Reader Service Card*

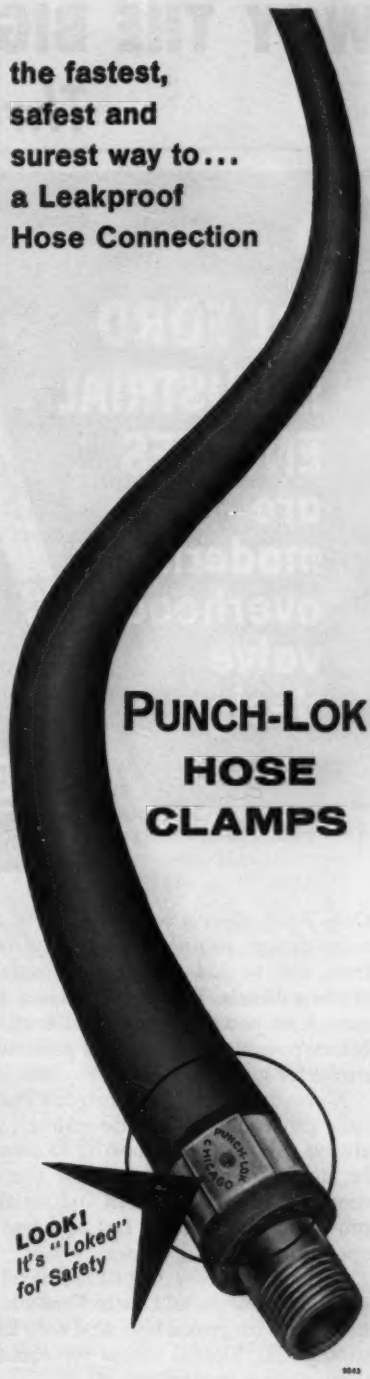
TRENCHING — Catalog No. 1000 pertains to the Wellpoint System for providing dry trenches.—Moretrench Corp.
Circle 386 *on Reader Service Card*

WIRE ROPE—The Wire Rope Reccomendation Booklet lists right diameter, lay and grade of rope for 50 jobs.—American Cable.
Circle 387 *on Reader Service Card*

DIPPER TEETH—Amsco has a Buyer's Guide for Simplex Teeth.—American Manganese Steel Div., American Brake Shoe Co.
Circle 388 *on Reader Service Card*

DIESEL ENGINES — Literature is provided on air-cooled and water-cooled models of Yanmar engines.—Continental Machinery Corp.
Circle 389 *on Reader Service Card*

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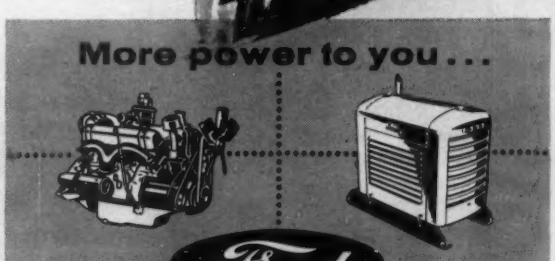
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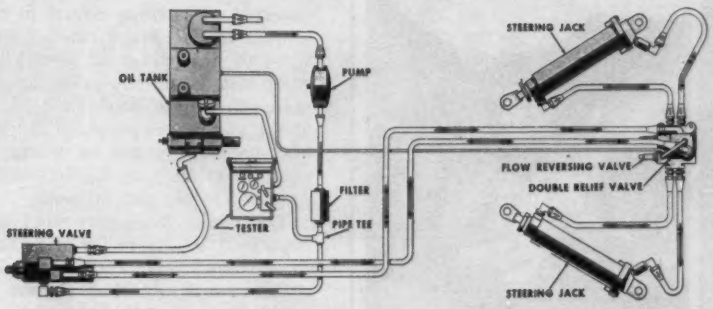
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STEERING SYSTEMS—Tester (left, near oil tank) measures efficiency of flow of fluid and pressure.

How to Trouble Shoot Hydraulic Systems

THE EFFICIENCY of any hydraulic system is determined by the power developed and transmitted by the system to the point where it performs useful work.

Efficiency is measured by the amount of time it takes a system to complete an operating cycle under full load. Cycle time, in turn, depends upon the system's ability to maintain the necessary rate of fluid flow and develop the required hydraulic pressure to overcome a load.

The above paragraphs illustrate why hydraulics have become the predominate method of transmitting power on construction equipment. The typical hydraulic system is relatively simple, and so are the maintenance procedures necessary to keep it operating.

This, the first of two articles on trouble shooting hydraulic systems, deals with the three basic and easily performed tests that will indicate how any system is functioning.

The three basic tests of hydraulic system efficiency are: (1) the cycle time test; (2) the flow rate test; and (3) the pressure test.

By a process of elimination, these three tests can determine the overall condition of any system, isolate faulty components, and pinpoint other troubles such as fluid restrictions, cavitation, and faulty pump speeds.

Testing the cycle time of a hydraulic system to determine its efficiency is a simple procedure. All that is needed is a stop watch.

Since a basis of comparison is also necessary, the average cycle time of an identical system tested under the same conditions must be obtained. If this data is not available from previous maintenance records, another vehicle with an identical hydraulic system that is known to be in good condition should be tested first. Check the control vehicle several times under full load to get an average cycle time that can be used as a reliable standard of comparison.

To test hydraulic system efficiency, merely load the vehicle to its capacity and check the time required to perform an operating function. Make the test with the vehicle's engine and hydraulic oil at normal operating temperature and with the engine running at top governed speed.

If cycle time is considerably longer than normal, further inspection and trouble shooting is required to determine the cause.

If the vehicle has not been checked carefully previously, a careful inspection should be made to uncover any mechanical obstructions that might cause rubbing, sticking or binding that would prevent the body, bowl, bucket, or steering mechanism from operating freely.

If trouble cannot be traced to a mechanical source, the flow rate test and the pressure test should be employed to pinpoint the trouble.

All hydraulic system components have some internal fluid flow loss or slippage, even when new. As components wear, they leak more and more fluid until —in extreme cases—almost all the fluid slips internally around valve plungers, cylinder pistons, and other points. During this period cycle time increases.

Since the efficiency of a hydraulic system depends upon both the rate of flow delivered by the pump and the pressure developed by the restriction to this flow, both flow rate and pressure must be tested if the condition of a system is to be determined accurately.

Because pressure is maintained in a system until almost all fluid delivered by the pump is dissipated through internal leakage, pressure tests alone will not isolate trouble until a complete breakdown occurs.

On the other hand, the flow rate may vary at different points in the system, depending upon the volume of fluid dissipated. Thus pressure tests at various points will tell whether the system is capable of doing its job, and flow rate tests show how efficiently the components are operating.

For these reasons, both pressure and flow must be tested at the same time.

The oil flow rate is affected by several factors, in addition to the condition of individual components. These include an inadequate oil flow to the pump caused by a low oil level in the reservoir, a restriction in the oil supply line to the pump, or insufficient pressure on the oil supply.

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MAINTENANCE SHOP . . .
continued

The procedure for testing the pressure and flow rate of a hydraulic system is basically the same for all systems. A flow rate gage and a pressure gage are inserted at various points in the system to check the rate of flow through the different hydraulic components and the pressure developed in the various circuits of the system. Separate flow rate and pressure gages or a multigage tester such as the Schroader portable tester can be used.

The flow rate-pressure test described below is for a typical Euclid overhung tractor steering system, such as that shown on p.209. This so-called tee test is a general type that can be applied to any hydraulic system to isolate faulty components.

It is a simple process-of-elimination test whereby the pressure and volume output of the pump is checked first at the pump outlet (pressure side). The various components and circuits then are progressively blocked off, starting at the pump and working back toward the hoists.

To determine the efficiency of the system, insert a pipe tee into the pump outlet line. If the vehicle is equipped with a high pressure filter, connect the tee to the outlet side of the filter. Plug one side of the tee and connect the pressure port of the portable tester to the opposite side.

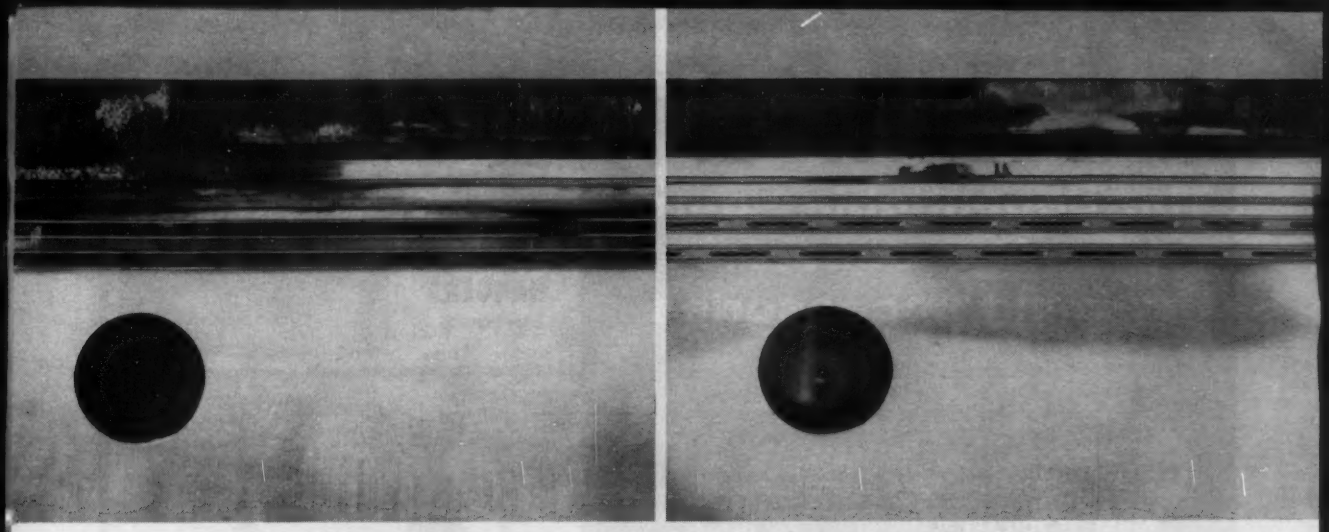
Then connect the tester return port to the oil supply tank. Close the tester gage snubbers and crack slightly. Start the vehicle's engine and depress the tester load valve to build up a moderate pressure to warm the oil in the system.

When the oil has reached normal operating temperature, release the load valve and read the gallons-per-minute delivered by the pump at top governed engine speed at no load. Then depress the tester load valve in increments of 100 psi until the pressure gage reaches the rated operating pressure of the pump.

A word of caution: Never operate a pump above its rated pressure.

Record the gallons per minute registered on the tester flow gage for each increase of 100 psi applied by the load valve. On vehicles equipped with relief

(continued on page 213)



Left: Poor performance of competitive diesel lubricant is easily noted on piston rings.
Right: Superior cleanliness—typical of Shell Rimula Oil performance.

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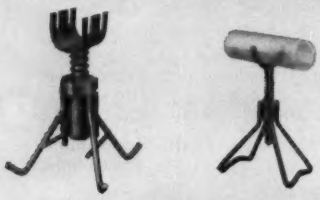
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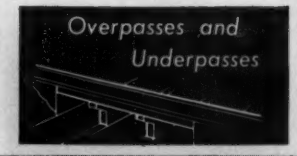


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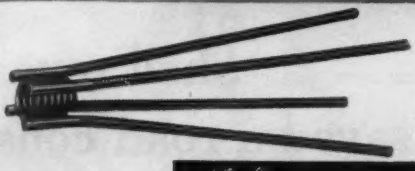
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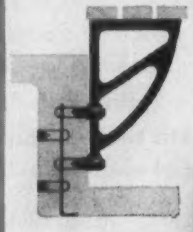


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MAINTENANCE SHOP . . .

continued from page 210

psi, begin recording flow rates when the load has reached 200 psi; on vehicles equipped with relief valves that open above 1,000 psi, start recording flow rates for each 100 psi above 500.

Comparing the pump volume delivered at rated speed and pressure with the pump-operating specifications published in the manufacturer's maintenance manual will indicate the condition of the pump.

Generally, an adequately supplied pump will deliver its rated volume (gallons per minute) at rated speed under no load, but if it is excessively worn it will show a severe drop in volume delivered as the load is increased.

There is one exception to this rule. When the pump does not deliver rated volume at no load and the output remains constant through the load (pressure) range, a suction problem is indictated.

If the volume delivered by the pump at rated pressure is substantially below specifications, it would be the prime suspect in a faulty hydraulic system and should be repaired or replaced before any additional pressure-flow rate tests are conducted. Should pump delivery be satisfactory, however, one or more of the remaining components must be at fault.

To test the operation of the steering valve, remove the plug from the tee and connect the hose that was removed from the filter to the tee. Then remove the hoses connecting the steering valve to the double relief valve at the valve and plug these hoses.

With the engine running at top governed speed, turn the steering wheel full right or left and hold or tie it in this position. With the hoses from the steering valve plugged and the valve plunger actuated by the steering gear, the oil from the pump would normally unseat the pressure relief valve in the steering valve and allow this oil to flow through the tank return line. But with the tester inserted in the system, the oil follows the path of least resistance through the tester.

Slowly depress the load valve on the tester and record the flow rate for each 100 psi increment registered by the pressure gage. As the tester pressure gage gradually rises, the flow rate registered by the tester will remain nearly constant until the relief valve in the steering valve cracks (if the valve is sound).

As the load valve is depressed further the pressure will continue to rise, but at a slower rate and the flow will decrease at a faster rate.

Finally, when the tester load valve is fully depressed, the maximum valve-operating pressure will be registered by the tester and no oil will be flowing through the tester. Thus, the flow-rate gage will register zero.

Turn the steering wheel in the opposite direction and repeat the steering valve test.

With the steering valve hoses to the double relief valve plugged, the valve actuated in both directions, the pump turning at rated speed, and the tester load valve depressed, the maximum operating pressure developed in the steering valve or the setting of the relief valve is measured.

If the maximum operating



Circle 213 on Reader Service Card

MAINTENANCE SHOP . . .
continued from page 213

pressure reached is substantially below circuit specifications and cannot be improved by adjustment of the relief valve, the steering valve is faulty.

Next, reconnect the steering valve hoses to the double relief valve. With the pump turning at maximum speed, depress the tester load valve all the way to force all the oil to the steering jacks. Turn the steering wheel until the tractor has turned 90 deg right or left. When the turn is completed, hold the steering wheel all the way over in the direction of the turn and repeat the test procedure for checking steering valve action, again recording all data.

Any differences in the pressure or flow readings from those noted in the steering valve test indicate faults in the remaining components (flow-reversing valve, double-relief valve, or the steering jacks).

Remember, as the pressure in the circuit is increased by repressing the tester load valve, the flow registered by the tester should remain nearly constant to the point where the relief valve opens as in the steering valve test. If the flow drops noticeably as the pressure increases (before the relief valve cracking pressure is reached), faulty components such as leaking hoist piston rings, valve blow holes, and so forth, are indicated.

Next, turn the wheel in the opposite direction and record the valume and pressure registered by the tester after the tractor is turned 180° with the steering wheel held all the way over in this direction.

If both sets of readings show satisfactory volume delivered by the pump and sufficient pressure developed in the circuit the remaining components are sound.

If one set of pressure and volume readings is within circuit specifications and the readings for the opposite turn were poor, the trouble could be in either steering jack, the flow-reversing valve, or the double relief valve.

To isolate the faulty component, block off both hoses to one jack and repeat the test for either turn, recording all data. Reconnect this hoist and block off both lines to the opposite hoist and repeat the same test.

If the pressure and gallonage readings improve when one of the hoists is eliminated from the system in this manner, the fault is obviously in that hoist. If the readings do not change, the trouble is in the double relief valve or flow reversing valve.

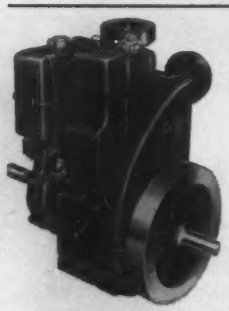
By progressively eliminating components from the system and retesting the volume delivered by the pump and the pressure developed in the remainder of the system, the components through which the hydraulic pressure and volume is dissipated can be detected. This trouble shooting procedure can be applied to locate faults in any type of hydraulic system, simple or complex.

This article is based upon a series on hydraulic system trouble shooting appearing in Service Subjects, a publication of the Euclid Div. of General Motors Corp. A future CM&E article will deal with the maintenance requirements of specific components in a basic hydraulic system.

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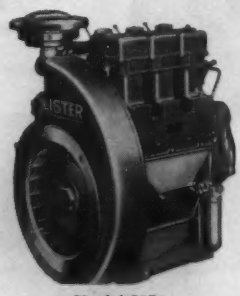
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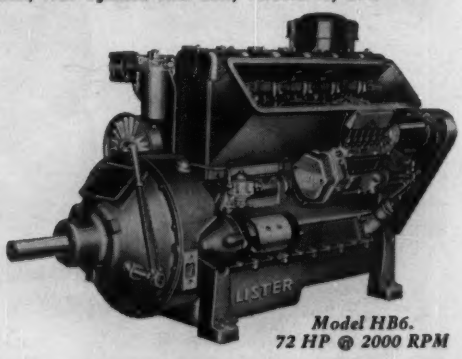
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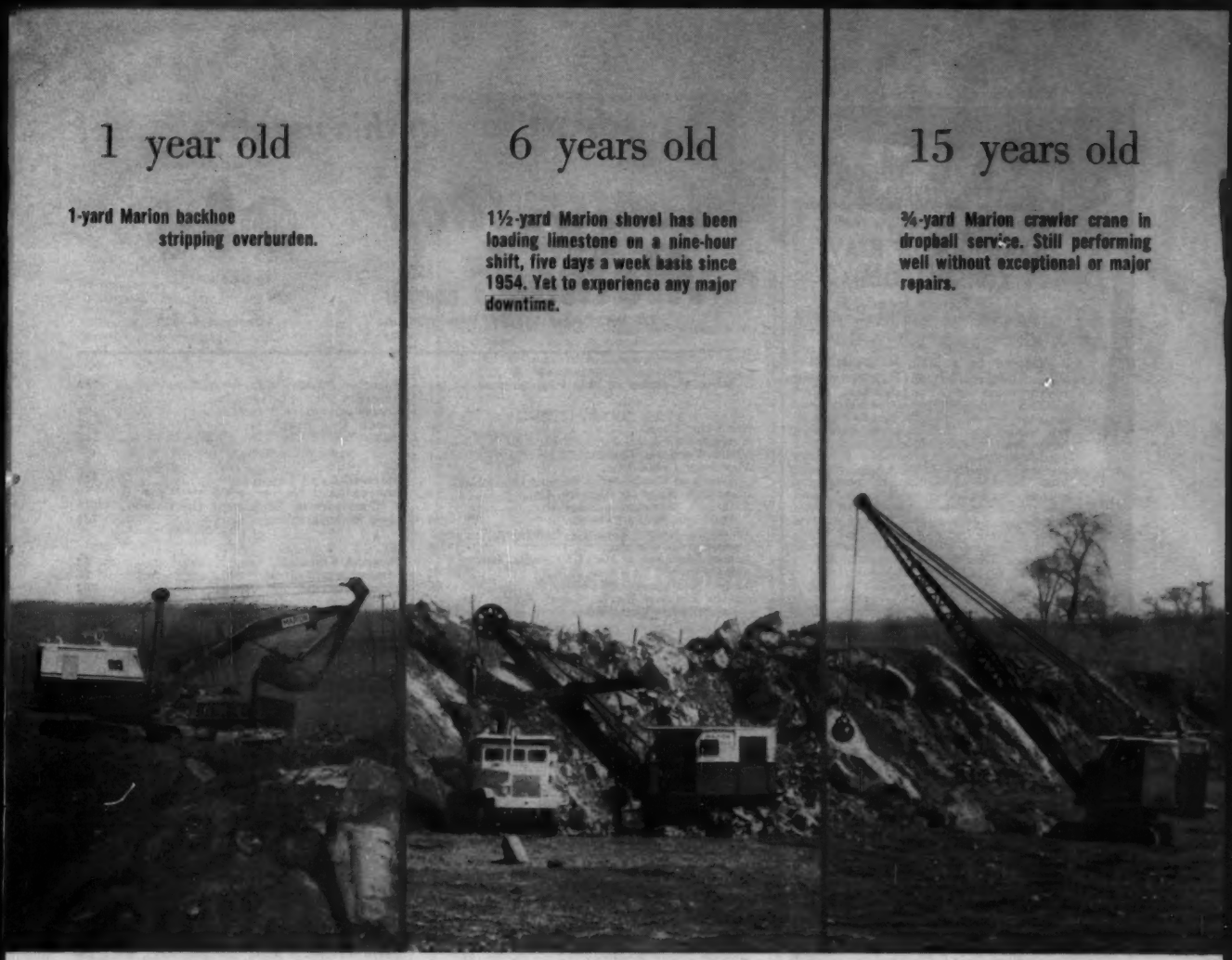


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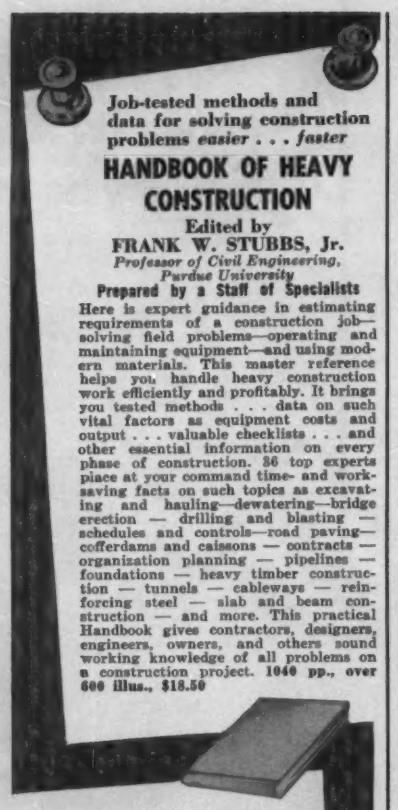
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Armco Drainage & Metal Products, Inc. 82
Atlas Powder Company 80-81
Audio Equipment Co., Inc. 65
Austin Western Works, Const. Equip. Div.
Baldwin-Lima-Hamilton Corp. 72-73

B

Barber-Greene Co. 18-19
Barco Manufacturing Co. 170
Bekaert Steel Wire Corp. 176
Bethlehem Steel Co. 177, 206
Black & Decker Mfg. Co., The 22-23
Blaw-Knox Equipment Div., Blaw-Knox Co. 171
Bucyrus-Erie Co. 63
Butler Bin Co. 26

C

Caterpillar Tractor Co. 183, 184-185, 186
Chevrolet Div., General Motors 40-41
Chicago Pneumatic Tool Co. 134-135
Cities Service Oil Co. 27
Clark Equipment Co. 84-85, 86-87
Cleveland Trencher Co., The 201
Clevite Service Div., Clevite Corp. 163
Construction Methods & Equipment 166-167
Continental Machinery Corp. 210

D

Dayton Sure Grip & Shore Co. 188
Detroit Diesel Engine Div.,
General Motors 28-29
Dietz Company, R. E. 54
Dodge Div., Chrysler Corp. 130-131
Donaldson Co., Inc. 199
Dotmar Industries, Inc. 203

E

Eaton Manufacturing Co.
(Axle Div.) 64
Eimco Corp., The ..... 3rd Cover
Ellicott Machine Corp. 204
Euclid Div., General Motors 112-113, 174-175

F

Federal-Mogul Service Div.,
Federal-Mogul Bower Bearings, Inc. 44, 117
Firestone Tire & Rubber Co. 33
Fleco Corp. 124
Food Machinery & Chemical Corp.
(Form-Crete Dept.) 180
Ford Motor Company
(Ford Div.) 136-137
(Industrial Engine Div.) 208
(Tractor & Implement Div.) 50
Foster Co., L. B. 10
Fuller Transmission Div.,
Eaton Mfg. Co. 132-133

G

Galion Iron Works & Mfg. Co., The 52-53
Gar Wood Industries, Inc. 156-157
General Electric Co.
(Miniature Lamp Div.) 196
General Equipment Co. 203
Gentex Corp. 161
GMC Truck & Coach Div.,
General Motors 55, 56-57, 58-59, 60-61, 62
Goodrich Aviation Products Co., B. F.
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H

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(Construction & Mining Div.) ..... 2nd Cover
Hercules Powder Co. 127
Homelite Div., Textron, Inc. 172-173
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Huber-Warco Co. 126

I

Ingersoll-Rand Company 39, 145
International Harvester Co.
(Construction Equipment Div.) 46-47, 48-49
Iowa Manufacturing Co. 150-151

J

Jackson Vibrators, Inc. 32
Jaeger Machine Co. 65
Johns-Manville 202

K

Kensbey & Mattison Co. 115, 116
Koehring Co. 160

L

LaCrosse Trailer Corp. 213
Lehigh Portland Cement Co. 6
LeRoi Div., Westinghouse Air Brake Co. 193
LeTourneau-Westinghouse Co. 141, 142-143
Lima, Const. Equip. Div.,
Baldwin-Lima-Hamilton Corp. 74-75
Lipe-Rollway Corp. 164
Lister-Blackstone, Inc. 214
Longyear Co., E. J. 210
Lubriplate Div.,
Fiske Brothers Refining Co. 162

M

Mack Trucks, Inc. 24-25
Manitowoc Engineering Corp. 181
Marion Power Shovel Co.
Div. Universal Marion Corp. 215
Marlow Pumps,
Div. Bell & Gossett Co. 198
Master Power Corp. 149
Mayo Tunnel & Mine Equipment 200
McGraw-Hill Book Co., Inc. 216
Moretrench Corp. 77
Motorola Communications &
Electronics, Inc. 182
Muller Machinery Co., Inc. 203

N

Naylor Pipe Co. 207
Neenah Foundry Co. 162
Northwest Engineering Co. 7

P

Patent Scaffolding Co., Inc. 30-31
Porter Co., Inc., H. K.
(Leschen Wire Rope Div.) 140
Preco, Inc. 197
Punch-Lok Co. 207

R

Radio Corp. of America
(Communications Div.) 71
RAMSET—Winchester Western Div.,
Olin Mathieson Chemical Corp. 66
Richmond Screw Anchor Co., Inc. 194
Rome Plow Co. 128

S

Safway Steel Products, Inc. 192
Schramm, Inc. 20-21
Shell Oil Co. 211
Simplex Industrial Forms, Inc. 197
SKF Industries, Inc. 158
Spencer Chemical Co. 195
Standard Oil Co. of California 51
Steel Joist Institute 129
Stow Manufacturing Co. 205
Superior Concrete Accessories, Inc. 212
Symons Clamp & Mfg. Co. 2

T

Texaco, Inc. 16-17
Thew Shovel Co. (Moto Loader) 121
Timken Roller Bearing Co. ..... 4th Cover

U

Union Wire Rope Co. 110-111
Unit Crane & Shovel Corp. 14
United Motors Service Div.,
General Motors 15

United States Rubber Co.
(Mechanical Goods Div.) 152
(Truck Tires—Off-The-Road) 122
Universal Atlas Cement Co.
Div. United States Steel Corp..... 159
Universal Form Clamp Co. 79

V

Vibro Plus Products Co. 190

W

Warner & Swasey Co., The
Gradall—Hopto Divisions 3
White Manufacturing Co. 165
Whiteman Manufacturing Co. 43
Willys Motors, Inc. ('Jeep') 88
Wisconsin Motor Corp. 154
Worthington Corp. 155

Y

Yale & Towne Mfg. Co. (Trojan Div.) .. 146

CLASSIFIED ADVERTISING
F. J. Eberle, Business Manager

Employment Opportunities 217
Notices
Auction 217
Equipment
(Used or Surplus New)
For Sale 217

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CAMDEN COKE PLANT

Of The Public Service Electric and Gas Co.

Front & Chestnut Sts., Camden, N.J.

Tues., June 27 at 11 AM (DST) on premises.

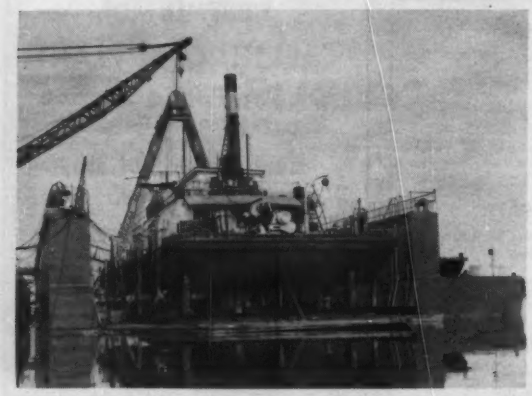
RAILROAD EQUIPMENT — Industrial Brownhoist 30 Ton Self Propelled Railroad Crane with 67' Boom (1950); G.E. Diesel Electric 45 Ton 300 HP Switch Engine (1947) Serial 29057; G.E. Diesel Electric 25 Ton 150 HP Switch Engine (1950) Serial 30596; McMyler Steam Railroad Crane; seven 50-Ton Standard Gauge Yard Gondola Cars; three 50-Ton Standard Gauge Yard Side Dump Cars. *EARTH MOVING EQUIPMENT*—2 Le Tourneau Super C Tournadozers (1950) with 11' Dozer Blades; LeTourneau Model E-16 Pan Type Scraper 9 cu. yds. capacity (1950). *COKE HANDLING EQUIPMENT*—7 Rubber Belt Conveyors — 36" x 253' C to C, 36" x 148', 30" x 57', 38', 29' and 27' C to C and 24" x 5'6" C to C with Head and Tail Pulleys, Idlers and Return Idlers; 6 Hunt, Gyroset, Robbins and Vibrex motor driven Vibrating Screens, 3'3" x 5' to 5' x 8'; 3 Gyroset, Mitchell and Gyrex vibrating units; Penna. 24" x 24' single Roll Crusher, Class B; 7 Clam Shell Crane Buckets 1½ yds to 1¾ yds capacity. *MACHINE TOOLS*—Lodge & Shipley 24/20 x 120" centers Geared Head Engine Lathe (1947) Serial No. 39326; Fosdick 25" Drill Press. *GENERATOR*—A-C 500 KW Generator with Terry Steam Turbine, .8 Power Factor and Pringle Controls, 2 phase, 4 wire. *MISC. EQUIPT. & SUPPLIES*—Quantity Electric Motors 50 HP to 1/50 HP (40 pieces); Quantity Speed Reducers (7); 20 Chain Hoists ¼ Tons to 3 Tons capacity; 180 HP Buda Diesel Engine; Quantity Tournadozer Spare Parts, Switch Engine Parts, Railroad Crane Parts; Large Quantity approximately 2945 ft. Rubber Conveyor Belting, 16", 20", 24" and 30" wide (mostly new); Quantity CO2 and 2½ Gallon Fire Extinguishers; Forge & Blower; Anvil; 2 Vises 6 and 10; Lathe Grinder; Pedestal Grinder; 2 Oil Switches; 2 Capacitors, 90 KVAR, 3 Phase; 3 Transformers, 10 and 15 and 25 KW; 2 Diehl Floor Fans; 2 Vent Fans; 2-1/3 HP Sump Pumps; 2 3-Sheave Blocks; 4 Chain Hoist Trolleys; I-R Port Air Pump; Track Jack; 3 Chipping Hammers; Shaw-Box Hoist; Blow Torch.

Exhibition: Friday, June 23 and Monday, June 26 From 10 AM to 4 PM.

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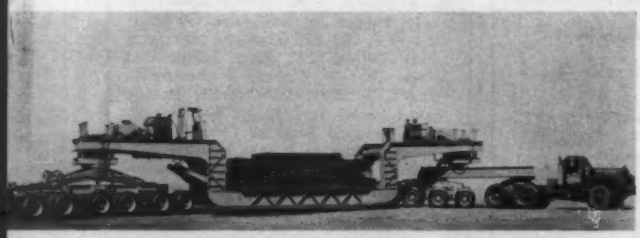


I-Beam Stilts Hold Up Derrick Boat

An old Corps of Engineers' derrick boat has been rebottomed after the 325-ton vessel was literally suspended on steel beam stilts in a floating drydock.

The derrick boat was drydocked conventionally on 5-ft-high keel and bilge blocks. But to give crews room to cut away over 25 tons of deteriorated bottom and side plates, external I-beam shoring was welded to the gunwale fenders and the bow of the boat so that the blocks could be removed.

The deteriorated plates then were replaced with a new hull section that had been completely prefabricated by Dravo Corp. The operation took place at Dravo's Wilmington, Del., yard.



Iran Gets World's Biggest Trailer

The world's largest truck trailer, a 40-wheeled Trailmobile, has been delivered to the Dex River Dam project in Iran where it will carry generators and other heavy equipment.

With Mack truck tractors at both ends to pull and push on steep grades, the rig has a total span of 136 ft. Above, it is shown with a test load well in excess of the 110 tons it is designed to carry. The trailer body can be hydraulically raised or lowered to clear roads or tunnels.

The driving crew includes one driver in the front tractor; a second driver on the trailer above the front 16-wheel bogie; a third man in a booth above the rear 24-wheel bogie; and a fourth operator in a rear tractor when extra push power is needed. Telephones link all crew members.

Castro Wants Tractors for Men

Fidel Castro says he'll exchange his prisoners of the ill-fated April 17th invasion of Cuba for 500 bulldozers. And if the bulldozers are not forthcoming, he'll use the prisoners in their place.

On a television program Castro said, "If President Kennedy says the invaders are his friends, and he loves them so much, let him send 500 bulldozers and we will send them back."

If the bulldozers aren't delivered soon, Castro said, the invaders "will work hard to build trenches and fortifications."

The premier's statements moved a crowd to shouts of "Let them work, Long live work!"

At press time, a group headed by Mrs. Franklin D. Roosevelt, Walter Reuther, and Milton Eisenhower had notified President Kennedy that they were willing to raise funds privately to buy the tractors. Kennedy approved the plan, but some opposition came from Congress.

Overseas Contractors Join Forces

Contractors who work overseas have banded together to protest a proposal in the Kennedy Administration's tax laws that would abolish tax deferral on overseas earnings.

American contractors, who last month organized the Construction Industry International Committee, say that this has been one of the few aids that overseas contractors receive from this government. They point out that their English, French, and West German competitors receive far more support.

Stiffening competition from these countries for new work outside the U.S. already has aggravated the financial problem of American firms overseas, they say. They point out that foreign projects require large amounts of working capital and that loss of the tax deferral privilege would weaken them financially.

The new committee's first job was to present testimony to the House Ways and Means Committee, which is holding hearings on the tax bill. Winfred C. Bloom, treasurer of Raymond International, Inc., of New York, is drawing up testimony and it will be presented this month by Raymond International's president, Henry Boschen.

Cost of Highway Construction Drops

The cost of highway construction in the first quarter of this year dropped 1.2% below the previous quarter, according to the Bureau of Public Roads. This decrease in the BPR's bid price index follows another 1.2% drop in the previous quarter.

With 1946 as a base year, the price index reached its high of 143.4 in the fourth quarter of 1957. The index for the first quarter of 1961 dropped to 133.4.

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R20 EARTH COMPACTION... 50¢

A 32-page booklet telling how to achieve better results at less cost when compacting all types of fills and embankments. It shows how to compact various soils most efficiently, what types of machines to use to do the job best and how they should be operated on the fill. Included are a "quick soil-typing guide," a glossary, tables showing what compactors to use under various conditions, and a listing of 49 state highway departments' fill-compaction requirements (densities, lift thicknesses, equipment.)

CONCRETE MIXING AND PLACING ... 50¢

R2 An 88-page booklet containing a series of articles on the fundamental principles of concreting for all types of structures. Subjects include: concreting equipment selection, application, and maintenance; production factors; form planning, design, and construction; design and control of concrete mixes; handling and placing concrete; underwater concreting.

PRESTRESSED CONCRETE ... 50¢

R5 A 20-page special report dealing with a variety of prestressing applications; commercial prestress – new market for contractors; pre-tensioning bed–assembly line for prestress products.

EQUIPMENT MAINTENANCE GUIDE ... 50¢

R6 A 36-page booklet in which 15 service experts detail the proper maintenance of crawler tractors, graders, scrapers, rollers, compressors, trenchers, crushers, trucks, cranes, asphalt plants, loaders, air tools, pavers, rock drills, wheel tractors.

DOES YOUR INSURANCE PROGRAM *REALLY* PROTECT YOU?

R8 A 12-page booklet by a construction insurance explains the importance of a sound program... strengthen liability coverage... how to protect y and your property. Included is a check list of in for contractors.

SURETY BONDS... Their Function, Value and Effect ... 25¢

R9 An 8-page article discusses the differences betwee and insurance coverages, tells how surety risks a uated, and describes various types of surety bond

BLASTING AGENT SLASHES POWDER COSTS BY 75% ...

R10 This editorial reprint deals with a blasting agent t powder costs to 4.5 cents per yd of rock.

R19 PROFITABLE FIELD LUBRICATION PRACTICES ... 50¢

Contractors' practices and mobile lubrication equi are covered in a 16-page booklet that also desc simplified lubrication program and the operation equipment maintenance company and of a maint contractor.

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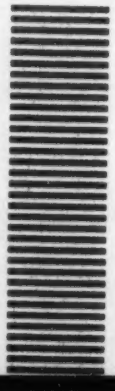
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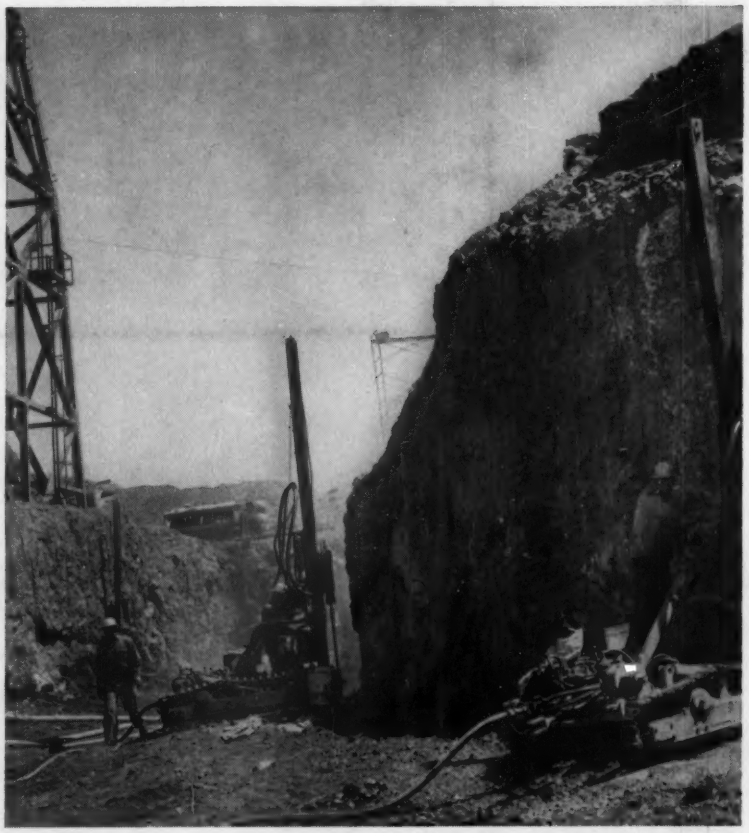
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